THE RAILWAY GAZETTE
A Journal of Management, Engineering and Operation
INCORPORATING
The Railway Engineer · TRANSPORT · The Railway News
The Railway Times · Herapath's Railway Journal ESTABLISHED 1835 · RAILWAY RECORD.
RAILWAYS ILLUSTRATED · THE RAILWAY OFFICIAL GAZETTE

PUBLISHED EVERY FRIDAY
AT
33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1

Telegraphic Address: "TRAZETTE PARL., LONDON"
Telephone No.: WHITEHALL 9233 (6 lines)

Annual subscription payable in advance and postage free:
British Isles and Abroad.....£2 5s. 0d.
Single Copies.....One Shilling
Registered at the General Post Office, London, as a Newspaper

VOL. 67. No. 13 FRIDAY, SEPTEMBER 24, 1937

CONTENTS

L.M.S. School of Transport

SIR JOSIAH STAMP, Chairman and President of the Executive of the London Midland & Scottish Railway, in his speech following the laying of the foundation stone of the L.M.S.R. School of Transport at Derby on Wednesday, referred to Mr. H. G. Wells's recent address to the British Association, and said that it had become a commonplace that education is a continuing process. Fully realising this, the L.M.S.R. Directors had been emboldened to try a great new experiment so that alongside the investment of new capital in transport the human side shall be continually kept abreast of the best methods in the service of the public. He stated most emphatically that it was not intended that the courses at the L.M.S.R. School of Transport should degenerate into mere routine lectures. The school would not be only a transmitter of new ideas, but a clearing house also. It was proposed to proceed on the principle "Let such teach others who themselves excel." Derby had been chosen for the location of the school because it was convenient of access and had all the necessary facilities closely adjacent in the shape of yards, and goods and passenger stations, control offices, signal boxes, etc., to demonstrate the practical application of new ideas. The L.M.S.R. had a most zealous staff, but the best goods agent even in Derby may well have something to learn from the best goods agent in Ross and Cromarty. When men came from all quarters a clash of ideas on the practical application of a general principle must, in itself, promote an even better practice for the succeeding course.

The Rhodesia Railways General Managership

In our Personal columns this week we publish a biography and portrait of Mr. W. J. K. Skillicorn, who will take over the general managership of the Rhodesia Railways in April, 1938. He succeeds Sir Henry Chapman, who received his knighthood in the Coronation honours this year. Mr. Skillicorn's experience of South African transport extends uninterruptedly for 34 years, for it was in 1903 that he joined the Natal Government Railways. He is, however, English born, and over a period of six years saw service with three railways in this country before leaving for Africa. Mr. Skillicorn is now to become General Manager of a railway system 2,441 miles in extent, the Mashonaland and Rhodesia companies having been amalgamated as from October 1, 1936, involving the debenture conversion scheme outlined in our issue of February 26 this year. For nine years previously, however, since October 1, 1927, the Rhodesia Railways Administration had worked the Mashonaland system, although it is only with the amalgamation of last year that all its assets and business were acquired. Mr. Skillicorn takes over the general managership at a period of considerable development to provide for growing traffic, and it will be the general hope that sustained expansion of business and facilities may mark his tenure of office.

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The Week's Traffics

For the past week the four group companies together secured a traffic increase of £105,000, made up of £8,000 from passengers, £40,000 from merchandise, and £57,000 from coal. The increase for the previous week was £103,000. Passenger train traffics for the 37 weeks to date amount to £53,636,000, an increase of £2,213,000; in the merchandise earnings of £39,937,500 there is an improvement of £1,195,000; and the coal class, with receipts of £23,534,500, shows an advance of £1,458,000. Total traffics have reached a figure of £117,108,000, which is higher by £4,866,000, or 4·34 per cent., than that for the corresponding period of 1936.

	37th Week				Year to date	
	Pass., &c.	Goods, &c.	Coal, &c.	Total	Inc. or Dec.	
	£	£	£	£	£	%
L.M.S.R. ..	+ 4,000	+ 18,000	+ 22,000	+ 44,000	+1,789,000	+ 3·95
L.N.E.R. ..	+ 3,000	+ 12,000	+ 23,000	+ 38,000	+1,580,000	+ 4·82
G.W.R. ..	— 1,000	+ 8,000	+ 12,000	+ 19,000	+ 959,000	+ 5·09
S.R.	+ 2,000	+ 2,000	—	+ 4,000	+ 538,000	+ 3·52

London Transport receipts for the past week show a decrease of £7,500. For the 12 weeks to date the increase is £8,900.

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Early Reasons for Unpunctuality

Sidelights on early days of railway operation are contained in an historic document recently discovered in the course of research work by an official of the L.M.S.R. in the office of the Divisional Superintendent of Operation at Hunt's Bank, Manchester. This document comprises a statement which formed part of the evidence offered by the London & Birmingham Railway to the Select Committee appointed by Parliament in 1839 "to enquire into the state of communication by railway." In dealing with late arrivals at Euston during the winter of 1839-40 many reasons are advanced; for example, the coke then commonly used as fuel is briefly quoted to explain 11 min. lateness as follows: "Short of steam, from bad coke." Frequent entries in the statement are: "Pumps of engine out of order" (88 min. late); "one of the pistons out of order" (87 min. late); "short of steam"; "engine out of order"; and "engine out of order and unable to proceed." Bad weather was also a source of many late arrivals. One train was an hour late at Euston owing to "high winds and short of steam"; another was 80 min.

late due to "heavy train and high wind"; a further popular excuse was "slippery rails." Connecting services appear to have been irregular and one train from Birmingham to Euston is stated to have waited 163 min. because the connecting train from the Grand Junction Railway was late. "Luggage trains" also caused widespread delays to passenger expresses, due to the absence of adequate signalling.

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Overseas Railway Traffics

The Buenos Ayres Great Southern leads among Argentine railways with its traffic increase of £35,548 during the past fortnight and ought soon to catch up with its aggregate decrease of £147,219 at this time a year ago. A satisfactory increase of £21,306 is recorded for the two weeks by the Buenos Ayres Western, which at this time a year ago had an aggregate decrease of £19,850. On the Central Argentine traffics continue to fall and the drop during the last fortnight was as much as £40,804, but at this time a year ago this company was on the right side to the extent of £168,013 for the twelve weeks.

	No. of Week	Weekly Traffics	Inc. or Decrease	Aggregate Traffic	Inc. or Decrease
		£	£	£	£
Buenos Ayres & Pacific ..	12th	79,591	+ 3,709	925,373	+ 59,210
Buenos Ayres Great Southern ..	12th	128,102	+ 19,808	1,389,889	+ 109,693
Buenos Ayres Western	12th	48,387	+ 9,152	536,974	+ 77,037
Central Argentine	12th	134,957	— 18,608	1,580,411	— 12,119
Canadian Pacific	37th	646,600	— 9,600	19,408,000	+ 1,006,800
Bombay, Baroda & Central India	23rd	209,400	+ 15,225	3,936,750	+ 297,300

The Canadian Pacific has lost £16,400 in traffics during the past two weeks. Continued improvement is being shown by the Bombay, Baroda & Central India.

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Sierra Leone Railway

As shown by the recently-received report, the year 1936 was the first year since the reorganisation in 1927 to show a surplus of revenue over gross expenditure (including loan charges) in the railway accounts, and was the most successful year in the history of the railway. The surplus of earnings over ordinary expenditure gave a return of 6·73 per cent. on the interest-bearing capital, as compared with 4·89 per cent. in 1935. An increase of £20,238 in revenue was earned with an increase of only £1,046 in working expenditure. Passenger receipts improved by £7,024 and goods revenue by £11,461, apart from the increase of £982 in the subsidy in respect of the reduced freight on palm kernels, the receipts from which commodity, including the subsidy, provided about 60 per cent. of the public goods revenue.

	1936	1935
Passengers	540,990	450,707
Paying goods, tons	76,887	71,628
Train-miles	390,225	373,422
Operating ratio, per cent. ..	64·88	71·59
	£	£
Gross receipts	200,243	180,005
Working expenditure	129,908	128,862
Loan charges and sinking fund	57,693	57,693
Surplus (+) or deficit (—) ..	+ 12,642	— 6,549

Running lines in operation during 1936 consisted of the main line (Freetown—Pendembu) of 227¼ miles, and the Bauya—Makeni branch of 82¾ miles, both on the 2 ft. 6 in. gauge.

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The Science of Straphanging

The introduction by London Transport, in the new cars now being put in service, of the "streamlined" rubber bulb type of straphanger, which demands an entirely new technique in use, gives us the opportunity of calling to mind some of the persons by whom this important fitting is now used or misused. A sight of more than a little pathos, soon to disappear, is that of three assorted and weary citizens clinging like a cluster of grapes to one strap. The rubber stalactites now provided are designed for one person and one hand only, and any attempt to dispute this is quite likely to lead to one's being laid low by some athletic female. Another type is the person who, although he has plenty of choice, *will* hang on to our strap and, if he can, read our newspaper. Whereupon the facial contortions necessary to look evilly at him and brightly and intelligently at our twopenny paper at one and the same time are quite liable to deceive those adjacent into the belief that we are about to run amok. A third type, whose ideas of comfort the new supports unfortunately will not thwart, is the large and muscular gentleman who maintains his equilibrium by grasping a strap on each side of the gangway and, leaning forward like a giant sloth, sinks blissfully into a coma, caring naught for the smaller fry who wish to get past him. With the limited number of points of suspension now to be provided we shall presumably have to proceed home clutching our neighbour with unsteady and unloving embrace—yet a further blow to the insularity of the British character.

* * * *

Franco-Ethiopian Railway Shares

The next stage in the dispute regarding the ownership of the shares in the Franco-Ethiopian Railway Company originally issued to the Abyssinian Emperor Menelik II will be reached on October 12. On that date the President of the Paris Civil Tribunal will begin hearing in camera the suit which is being brought by Haile Selassie, the Emperor of Abyssinia, against Silvio Lessona of Florence, as agent for the Italian Government, in which the Emperor disputes the action of the Italian representatives of the Franco-Ethiopian Railway Company in Paris in refusing to negotiate his shares, which are worth about fr. 30,000,000 (approximately £230,000). He also disputes the Italian Government's opposition to the payment of dividends to him. The Italian Government claims ownership of the shares, holding that it is the rightful Government in Abyssinia. The shares are stated to be registered not in the Emperor's name but in that of the Government of Abyssinia. The securities in question are understood to comprise 8,650 shares, or exactly a quarter of the issued share capital of the railway. The position of the company was outlined in an editorial article in our issue of May 15, 1936, but it appears that the distribution of the shareholding is somewhat different from what was then reported, for, if the Abyssinian share is 8,650 and the "pre-war" Italian holding about 2,700, there are left only 23,250 instead of the 30,000 often stated to be in French hands.

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Buffet Cars

It is not without significance, in view of subsequent developments, that the first buffet cars on record in Great Britain appeared on the lines of one of the constituent companies of the present London & North Eastern Railway. It was the Great Central Railway that first advertised, as one of the attractions of its newly-opened London Extension in 1899, "every express train vestibuled, with buffet car attached." Of recent years the L.N.E.R., which has always been well to the fore in all democratic travel developments, has been engaged in maintaining the tradition so established. To the news already published of eight new buffet trains to operate between Liverpool Street and Cambridge there is now added, as recorded on p. 536, the announcement that no fewer than 36 new buffet trains will run in future between Newcastle and Middlesbrough (where the whole of the hourly express service is thus modernised), and between Leeds, York, and Scarborough. This will bring to a total of sixty the

number of trains running daily with buffet cars on North Eastern Area metals, and to that area must be given the credit of having developed what is easily the best and most varied buffet catering on the L.N.E.R. With 44 buffet trains in the Southern Area, and 3 in the Scottish Area, the L.N.E.R. has thus a total of 107 buffet car equipped trains in daily service.

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Railway-owned Forestry Department

There are probably few railways in the world having their own Forestry or Forest Services Departments such as has the Paulista Railway in Brazil. This department was formed with a view to supplying the line with its own locomotive fuel, coal being very costly and difficult to obtain. Up to the end of 1936, there were 15 forests at different points on the system and nearly 11,000,000 eucalyptus trees had been planted; with the acquisition of more land early this year, it is expected that there will be 20,000,000 trees owned by the railway within five years. Receipts up to and including 1936 totalled 13,000 contos, and expenses 12,400 contos, so that this afforestation scheme is already proving a profitable undertaking. The quantity of fuel supplied up to December 31 last was 1,685,500 cu. m. in addition to 115,700 props and posts, and when the total of 2,000,000 trees is reached, 75 per cent. of the railway's fuel consumption will be guaranteed; the figure for the current year is expected to be 60 per cent., without unduly impoverishing present plantings. Additional wood fuel is also purchased locally for the time being, so that the railway can build up immense forest reserves for future use when the trees have arrived at a more advantageous age for cutting. The Forest Services Department at present employs over 1,000 hands.

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Safety in Machine Shops

In railway machine shops, as in all others, a certain number of accidents to machines and their operators is almost inevitable in course of time. For years past, machine tool manufacturers have given continually increasing consideration to the safety and convenience of the operator, and the protection of the machine from damage. Some thoughtful observations on this subject were published in the house organ of a well-known firm of machine tool manufacturers recently, where it was pointed out that in spite of improvements it is very debatable whether accidents causing damage to machines or injury to the operators have decreased proportionately to the progress in safety measures. This suggests that present-day damage may be caused largely by lack of care and skill on the part of operators whose sense of responsibility has been reduced by the improvements in machines. The user of expensive machine tools naturally expects the manufacturer to take every reasonable precaution against damage by faulty operation, and it will be generally admitted that reputable makers have done everything possible to ensure this. It therefore seems reasonable to expect managements to re-cultivate in operators a measure of responsibility and careful handling of machines in their charge, not only with the idea of reducing avoidable depreciation of plant, but also to instil appreciation of the devices provided for their own protection.

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The Occupation Crossing Problem

The crossing accident near Stoke-on-Trent, L.M.S.R., on September 8, when an express struck a loaded lorry; and another at West Cottingwith, Derwent Valley Light Railway, on August 11, following that on the same line at Olsbaldwick on July 5, have again directed attention to the occupation crossing problem. At West Cottingwith a private motorcar was run down and its two occupants killed. The inquest revealed that the gates were constantly left open, in spite of prominent notices directing users to shut them and stating the penalty for non-compliance. It was suggested that the persons in the car—the driver had not been along the road previously—thought they were approaching a crossing having its gates closed across the line, and that therefore no train was coming. The engine driver—apparently the man concerned at Olsbaldwick—is reported as saying it was " harder to work these 30 miles than 200 with a main-line express," which we can believe. Although the number of accidents at these crossings is relatively not large, the question is growing in importance and it is recognised that they constitute a breach of fundamental signalling and safety principles. It is not easy to suggest a way out of the difficulty, short of abolition, which finance forbids, that will meet every contingency; but we believe that the provision of warning apparatus in a number of cases is receiving serious consideration.

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Bogies for High Speeds

Trains running for prolonged periods at high speed on railways, and comprised of normally constructed locomotives and coaching stock, can be relied upon to give satisfactory service and possess an adequate margin of safety in all circumstances. As a rule, however, trains working on specially accelerated services are nowadays of a separate design, with streamlined engines and rolling stock presenting something out of the ordinary in the way of external appearance and interior appointments. The locomotive is built for speed and the coaches for comfort and attractiveness, and so far all is well. It must, however, be remembered that with any marked increase in continuous speed, there arises an increased need for measures which will ensure that steadiness in running is not sacrificed, and that the much higher speeds can be indulged in with equal safety. A leading factor in this respect is the design of the bogie control gear, and of interest in this connection is the arrangement used by Mr. W. A. Stanier for the L.M.S.R. Coronation Scot trains, a short illustrated description of which appears on page 529 of this issue. In addition, two out of the three trains have the wheel treads turned cylindrically instead of at 1 in 20, and this makes possible a thorough comparative test of the two contours. In due course, it should be possible to say which of the two is the better.

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The Biter Bit

Even in this country the toll levied on animal life by the railways is by no means inconsiderable; such small creatures as can penetrate the lineside " defences " fall by the score as the daily victims of the traffic of the rails. Among these luckless quadrupeds may be mentioned the excursionist otter who was electrocuted on the Southern Railway as recorded in our issue of August 13. On the unfenced railways in tropical parts of the world, the boot is often on the other foot, and an encounter with a pugnacious animal of formidable size can be really dangerous to the train. Recently at Nairobi in Kenya Colony, passengers on an express train were suddenly thrown out of their sleeping berths as the train was brought to a standstill following a violent shock. An infuriated rhinoceros, blinded by the glare of the headlights, had charged the locomotive, with fatal results to itself. The incident parallels another of some time ago, when a passenger train obligingly killed a giraffe, providing a supper for the three lions which had been pursuing it.

Recasting the Midland Timetable

CLOSER examination of the winter train service over the Midland Division of the L.M.S.R., which was briefly reviewed in the September 3 issue of THE RAILWAY GAZETTE, and is the subject of further notes on page 515 of this issue, proves the reorganisation to be one of the most complete of any in British railway history. To us it is of the most interest because it embodies various principles which from time to time have been advocated in these columns. In the first place, the improvements do not consist merely in the addition to the timetable of one or two spectacular high-speed trains, while the remainder of the service continues in unchanged times, or, still worse, suffers in its speed and general arrangement in order that paths may be found for the new flyers. On the contrary, the operating authorities of the L.M.S.R., while preserving to some considerable extent the skeleton of their previous long-distance service over the Midland Division, have not hesitated at the work involved in a complete recasting of the timetable, which both provides the maximum benefit to the system as a whole, instead of to selected services only, and is also one of the most effective contributions to a punctual observance of the times now laid down.

The extent of the *average* improvement of service—the best criterion of public benefit—is well indicated in the table on page 516 of this issue. At one stroke the average journey time of thirteen daily trains between St. Pancras and Manchester is cut by 21 min.; of eighteen trains between St. Pancras and Nottingham by 12 min.; and of 23 trains between St. Pancras and Leicester by 8 min.; the St. Pancras—Sheffield daily service is increased from 16 to 19 trains, while at the same time the average journey is reduced from 3 hr. 19 min. to 3 hr 8 min. Whereas certain Midland services have continued until the present to be inferior in average journey time to those operating before the war, and others have recovered to a condition barely equal or in no degree superior, the new timetable considerably more than restores the best standards of speed that obtained in the pre-war era, when pooling was unknown, and the Midland was strenuously in competition with powerful rivals. Moreover, while that past competition resulted in some neglect of intermediate towns of growing importance on the Midland system, such as Kettering and Derby, in order that the fastest possible service might be given to and from competitive points, the locomotive power now available makes it possible to maintain all the additional intermediate facilities that have been accorded while Midland overall speeds have been taking a secondary position, and still to give end-to-end times faster than at any earlier period of Midland history.

The new Midland timetable is also of importance in that it establishes the practicability of the mile-a-minute standard of inter-city speed for which we have often pressed. Hitherto, apart from isolated high-speed services such as the Coronation, Coronation Scot, Silver Jubilee, Bristolian, Cheltenham Flyer, and others, which give mile-a-minute service between London and important provincial cities once or twice daily, Coventry has been the only English town which could claim to be linked with London by an ample service of trains at over 60 m.p.h. in each direction. Now Leicester and Nottingham will enjoy the same privilege, and in view of the heavy gradients between these two Midland cities and St. Pancras, it is all the more praiseworthy that it should have been found possible to standardise 99 min. as the non-stop time in both directions over the 99·1 miles between the former and London, and 123 min. over the 123·5 miles between Nottingham and London, the latter inclusive of the severe slack necessary through Kettering. Between St. Pancras and Wellingborough, Kettering, Leicester, Melton Mowbray, Nottingham, Derby, Sheffield, and Manchester better times are established than ever previously; and although the cautious running now necessary through the mining areas of Nottinghamshire, Derbyshire, and Yorkshire makes it difficult to offer effective competition to the L.N.E.R. so far as concerns the London—Leeds and London—Bradford services, the West Riding benefits considerably in the improvement that has been effected between West Riding towns and all other parts of the Midland system. Indeed, this improvement of town-to-town communication over the entire Midland Division, although in some respects it still falls short of an ideal balancing of facilities in the up and down directions, is an important feature of the reorganisation.

There are one or two other respects in which the new timetable falls short of perfection. Although the greatly accelerated St. Pancras—Manchester service is designed to re-attract regular passengers from the Western to the Midland Division, and so to relieve the former, the departure times by both routes have not been spread so as to give departures from each end at hourly intervals, as might seem possible. So express trains leave both St. Pancras and Euston for Manchester at 8.30 a.m. and again at 10.30 a.m.; 2.30 p.m. and 2.50 p.m. are another pair; then 4.30 and 4.10 p.m.; and similarly in the up direction there are expresses at 9.45 a.m. from London Road and 10 a.m. from Central; 12.5 and 12.25 p.m.; 2.20 and 2 p.m.; and 4.10 and 4.25 p.m. Further, as pointed out in the article on page 515, a fine opportunity has been lost—seeing that pooling is now in force—of fusing the L.M.S. services from St. Pancras with the L.N.E. services from Marylebone, both of which serve a large area of common territory. Nor has the long-felt need for fast early morning services from London to Manchester and Sheffield been met, though the reinstatement of a late evening dining car express from St. Pancras at 8 p.m. to Leicester, Nottingham, and Sheffield is a development that will be widely welcomed. It is also unfortunate that no attempt has been made in Scotland to back up the Midland accelerations by some improvement of the leisurely timings between Carlisle and Glasgow (St. Enoch), which, with some acceleration between Leeds and Carlisle, might once again have popularised this route between London and Glasgow (as well as improving the service between the Midlands and Glasgow), and so have eased the pressure on the West Coast route. But these are, perhaps, minor blemishes in a timetable reorganisation which is of major importance.

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British Railways in Spain

THE remarks in an editorial note in our issue of June 18 upon the contrast between the conditions of the railways in different parts of Spain since the outbreak of the civil war, are strikingly corroborated by two recently-published documents. These are (*a*) the Chairman's speech at the annual general meeting of the Anglo-Spanish Construction Company, which works the Santander-Mediterraneo Railway, and (*b*) a circular issued to its bondholders and shareholders by the Barcelona Traction, Light & Power Company, which is incorporated in Canada. The following is an extract from (*a*):—

Since the outbreak of civil war the working of the railway—the whole of which operated in the territory under General Franco's Government—had been normal, and the shareholders would be interested to hear that the Nationalist cause, in the provinces through which the line passed, had been a sufficient guarantee of peaceful working conditions. The year 1936 closed with a deficit of approximately 1,200,000 pesetas, but in 1937, despite the loss of coal traffic, which constituted a large proportion of the total, receipts showed a

marked recovery and for the first four months were 30 per cent. better than those for the same period of the previous year, and 12 per cent. better than the corresponding figures for 1935. The staff was to be congratulated on this achievement, not forgetting the credit due to General Franco's Government for the conditions which had made this recovery possible.

In contrast to this testimony to the attitude of General Franco's Government towards British interests in the areas it controls, is the circular of the B.T.L. & P. Co. Ltd., part of which is summarised below:—

Since the circulars issued by the directors on September 3 and November 16, 1936, after the outbreak of civil war, conditions in Spain have grown steadily worse, and it has been found impossible to obtain any reliable information as to the true position of the enterprise. On the outbreak of the revolution in July, 1936, a "Workers' Committee," composed of representatives of the labour syndicates, installed itself on the premises of the company in Barcelona. In spite of the representations made to the British Foreign Office, and the protests submitted by the British Consul-General to the Catalonian Government, no satisfactory results were obtained, and the funds and cash, amounting to over 43,000,000 pesetas, were removed from the banking accounts of the enterprise and appropriated by the Workers' Committee. In August, 1936, all British subjects were warned by the Consul-General to leave Spain, and, although Mr. F. Fraser Lawton, the Managing Director, and other chiefs of staff remained on duty, they also were obliged to leave in September. Up to the time of the withdrawal of the British staff from Spain, namely, about September 9, no material damage had been done to the properties of the company, but no reliable information is available either as to the present state of the property, or whether the operation of the enterprise is being carried on in a businesslike manner.

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The Belgian National Railways in 1936

THE Belgian National Railways Company completed last year the first ten years of its existence, and the Council of Administration, or Board of Directors, has issued as an annexe to the annual report for 1936, a booklet describing the progress of the company since the date of its incorporation in 1926. Some of the important features of this booklet were summarised in our issue of August 20 last, at page 317. The nominal capital of the company is made up of fr. 11,000 millions in the form of preferred and ordinary shares, the preferred shares having been issued by the State with a guarantee of interest and sinking fund. The estimated present total of the capital account is given as fr. 3,941 million gold. The length of line operated by the Société has been increased from 4,795 km. in 1927 to 4,849 km. in 1936. The principal results of working compare as follow:—

	1927	1935	1936
	(Millions of francs)		
Gross receipts	2,889	2,214	2,287
Total expenditure	2,474	2,135	2,305
Net receipts	415	79	— 18
Rates of working, per cent. ..	85·65	96·45	100·76

During the period 1926/1930, that is, in the first five years of the company's control, the receipts exceeded the expenses, but with the initiation of the general depression in the last named year the situation was reversed. Taking into account the financial charges and the statutory *prélèvements*, the ten annual periods were liquidated with the following results:—

1926/1927 (16 months)	Surplus	fr.	593·6 million
1928	,,	fr.	436·4 ,,
1929	,,	fr.	405·1 ,,
1930	,,	fr.	202·4 ,,
1931	Deficit	fr.	13·8 ,,
1932	,,	fr.	287·1 ,,
1933	,,	fr.	115·8 ,,
1934	,,	fr.	156·2 ,,
1935	,,	fr.	89·8 ,,
1936	,,	fr.	160·0 ,,

Of the fr. 1,637 million surplus for 1926/1930, 1,621 millions were distributed between shareholders and personnel, and 16 millions carried forward. Of the 823 millions of the later deficit, 445 millions have been met out of reserves, the remaining 378 millions remaining for subsequent liquidation. Contrary to the general belief the deficit has not been met out of the national exchequer.

The statistical results of working are elaborated in detail in the booklet accompanying the report and full explanations are given of the measures taken by the Société to ensure the greatest possible economy of working compatible with efficiency, and notwithstanding certain limitations inherited from the earlier period. The effect is particularly noticeable in staff, the numbers of employees having been reduced from 104,927 in 1926 to 77,143 in 1936, notwithstanding the legal condition of fixity of tenure. The report contains a diagram showing how the course of the expenditure closely follows that of receipts, a fact which, as is pointed out, is noteworthy considering that experience and theory agree in fixing at 35 per cent. of the total the proportion of the expenditure that can safely be said to fluctuate with the volume of traffic. The principal statistics compare as follow:—

	1935	1936
Number of passengers (millions)	185·1	189·5
Tons of goods (millions)	58·7	65·0
Train kilometres (millions)	75·3	78·8
	(Millions of francs)	
Coaching receipts	754	755
Goods receipts	1,412	1,475
Miscellaneous	48	57
	2,214	2,287

In 1936 the distribution of passengers by classes was 0·2 per cent. first, 6·9 per cent. second and 92·9 per cent. third, while by receipts the proportions were respectively 1·6 per cent., 17·4 per cent. and 69·6 per cent., with 11·4 per cent. for workmen's season tickets. The accident statistics show six passengers killed and 108 injured in 1936, or one in 31 millions and one in 1·8 millions respectively. The average haul of a ton of goods was 82·1 km., and the average paying train load was 247·3 tons.

The report records how the Société has sought to reduce costs by closing superfluous stations, workshops and offices, and centralising repair work. The number of stations, for example, 777 in 1926, compares with 565 at the present day, many having been converted into *haltes* or *dépendances*. At the same time both passenger and goods train services have been accelerated and a "door-to-door" service of parcels and miscellaneous goods is now general. Coal consumption, which was 21.987 kg. per engine-kilometre in 1926 has been reduced to 19.371 kg. A locomotive general repair which averaged 60 days in shops is now completed in 22 days, while the service between general repairs, once 106,000 km., now averages 170,000 km. The length of track laid with 50-kg. rails, which was 3,374 km. in 1926 has been increased to 5,288 in 1936. One of the outstanding causes of a heavy increase in expenditure is the cost of meeting statutory concessions to workmen. Expenditure under the head of personnel increased in 1936 over the previous year by no less than fr. 167.6 millions, caused principally by the new legislation affecting hours of duty, annual vacation with pay, and the reduction in the age of retirement on pension. The report contains a series of appendices with full statistics of working, in which the figures are compared not only with those of the previous year, but with the whole of the ten years comprised in the period of the company's operations, as well as in some cases with 1913, the last of the pre-war years.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

British Locomotive Types

London, E.C.1
September 20

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The book recently issued by you with the above as its title, is to my mind a most useful addition to available publications dealing with the subject of locomotives. In the past, I have on numerous occasions experienced considerable difficulty in obtaining particulars relating to the different railway companies' engines, and this new volume provides exactly what I require in a most handy and convenient form.

I have noted what is apparently an omission; namely, on page 25, where the L.M.S.R. turbine locomotive is shown. In this case, no tractive effort figures are given, whereas in all the other engines dealt with, these appear at the end of the table. May I suggest that this be remedied in a future issue.

Yours truly,
A. SHARP

[The power output of a turbine locomotive, unlike that of the reciprocating type, is not expressed in terms of tractive force. The locomotive referred to is fitted with a main (forward) turbine of 2,000 h.p., and is designed for an output of 2,000-2,500 h.p.—ED. *R.G.*]

London-Cambridge Train Services

60A, Green Lane, Northwood, Middlesex
September 20

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Would it be quite impossible for the St. Pancras-Cambridge service to be revived, and for L.N.E.R. trains to run to and from the L.M.S.R. terminus, as the G.E.R. did to the Midland Railway terminus?

St. Pancras is quite as convenient for London as King's Cross, and much more convenient than Liverpool Street for most people. In pre-war days a down train ran for many years from St. Pancras to Cambridge in 71 min.—the best timing on the three routes—and with the general speeding up probably the 56 miles could now be done in 60 min.

Oxford to Paddington—an easier road, of course, but some 7 miles longer—is done, one way, in 60 minutes.

Your obedient servant,
REGINALD B. FELLOWS

PUBLICATIONS RECEIVED

TTR Permanent-Way Manual—Layout and Operation of Model Railways. By Henry Greenly, A.I. Loco.E. 9¼ in. × 6 in., 92 pp. With 16 half-tone and many line illustrations. Percival Marshall & Co. Ltd. Price 1s. 3d.—The "TTR" of the title of this handbook is the "Twin-Trix-Railway" idea which has done much to popularise the construction of miniature railways on the "00" or ⅝-in. gauge; its advantage is, of course, that a system of considerable size can be assembled in a limited space and that equipment on this small scale is relatively inexpensive. In every realm of model railway work, from the diminutive "00" gauge up to the passenger-carrying realities of the 15-in. gauge, the name of the author, Mr. Henry Greenly, is by now a household word, and he well lives up to his reputation in this excellent little treatise. Laying down the indisputable proposition that more is required in the complete model railway than a mere reproduction of the details of the prototype, Mr. Greenly goes on to give valuable advice as to the layout of model lines, methods of control and working, and even such matters as the compilation of time-tables, all explained with simplicity and elucidated, as is the author's wont, with a profusion of line diagrams. The intelligent interest in railway operation so aroused, through the medium of the model, may well produce some of the railwaymen, and even, perhaps, the railway officers of the future.

Statistical Year Book of the League of Nations, 1936-37. London: Allen & Unwin (League of Nations Publications Department), 40, Museum Street, W.C.1. 9¾ in. × 7½ in. 311 pp. Price, paper covers, 10s. 6d.; cloth, 12s. 6d. net.—Most of the statistics in this volume, which, as in previous years, gives a view of the chief demographical, economic, financial, and social phenomena of the world, are brought down to the end of 1936, and others include the first quarter of 1937. The tables are so arranged as to facilitate so far as possible a comparison between different countries in respect of territory and population; labour conditions; production; international trade and balances of payments; transport; public finance; banking and money; and wholesale and retail prices in gold francs. On the transport side railway freight figures are included for the eight years 1928 to 1935 inclusive, and so far as possible for 1936. The air transport statistics are particularly full, and the compilers explain that the data for a particular country do not include traffic operated by foreign companies, but they do include traffic operated abroad. This distinction, based on the concept of the flag rather than on that of political frontiers, is necessary owing to the international and even intercontinental character of air navigation, and is the only means of avoiding overlapping. An atlas section near the end shows international frontiers. Information is given throughout in French and English, and this applies also to the useful and comprehensive indexes published on pages 313 to 330.

Vanadium Steels and Irons. 9 in. × 6 in. 187 pp. The Vanadium Corporation of America.—By degrees the production of steels to meet the widely varying demands of the steel user is becoming a more and more highly specialised science, and an increasing amount of research is being devoted to alloy steels and appropriate methods of heat treatment in order to secure a steel product on which reliance may be placed in every condition of use. This handbook deals exclusively with the properties, treatment, and uses of vanadium alloys, including wrought constructional steel in both light and heavy sections, spring steel, cast steel, tool steel, nitriding steel, and also vanadium cast iron. Among the alloy steels dealt with are chromium-vanadium, manganese-vanadium, nickel-vanadium, tungsten-vanadium, and more complex alloys such as chromium-molybdenum-vanadium, and the same with the further addition of nickel. The treatment of the subject is exhaustive, and includes reproductions of micro-photographs of structures, and many graphs of mechanical properties, together with tables of test results. Much practical advice is given on the uses of steels of this description, and the book concludes with a comprehensive index.

Emergency Lighting.—The D.P. Battery Co. Ltd., Bakewell, Derbyshire, sends an illustrated catalogue describing the Katholite emergency lighting equipment. In the automatic system the stand-by batteries are kept charged by means of a trickle charger with valve rectifier or suitable resistance. The emergency lights are automatically switched on should the mains supply fail. It is also possible to have the emergency lights continuously supplied from the mains through a step-down transformer, and transferred to the battery in case of supply failure. The trickle chargers are provided with a quick charge adjustment to bring the batteries rapidly back to normal after they have been in use. The firm also quotes for the installation of non-automatic emergency lighting batteries and switchgear.

THE SCRAP HEAP

Approximately 47,500,000 sleepers were replaced by the U.S.A. railways in 1936, or enough to build 16,000 miles of track.

* * *

HOW LONG DID IT WHISTLE?

A railway engine travelling at 30 miles an hour, began to sound its whistle when it was a mile away from me. The shrill sound continued until the engine had gone past me for a mile and a half—then the sound ceased.

For how long could I hear its whistle? (Sound travels 1 mile in 5 sec.)

The engine whistled for 5 min. I could hear it for 5 min 2½ sec.—*"Ripley" in "The Sunday Express."*

* * *

FORTH BRIDGE PERMITS RESTRICTED

Male members of the public wishing to make a close inspection of the Forth Bridge have until recently been allowed access on to the structure upon application to the L.N.E.R. The company, however, is now restricting the issue of permits to those having technical knowledge of bridge structure.

* * *

The extraordinary dearness of coal has made railway directors consider plans for meeting the evil. We hear, on good authority, that chalk mixed with coal has recently been used on one of the railways, with success from the economy point of view, and the railway company concerned has made arrangements for a regular supply of chalk at each station. For the present, however, this coal-chalk is confined to use in offices and waiting rooms. For the locomotive no means of applying it have yet been invented. It is claimed that a layer of chalk between two layers of coal will produce a fire that will last much longer than an all-coal fire, and throw out much greater heat. *—From "The Hour" for March,* 1873.

* * *

WATERLOO, NEXT STATION!

Passenger: "Porter! Porter! There's a man in this compartment who's a raving lunatic. He's scaring my wife. Seems to think he's Napoleon."

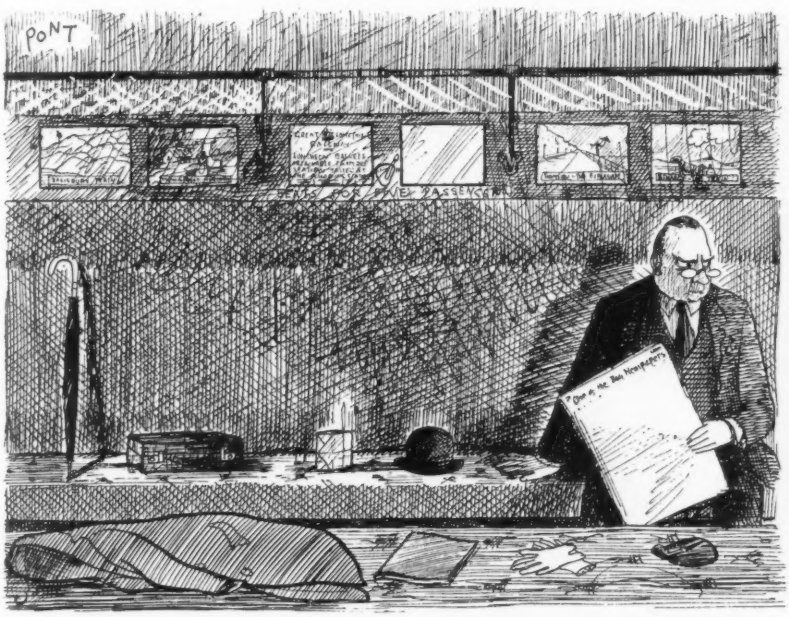
Porter: "I'll attend to him, sir. Next station, Waterloo!"

* * *

GLASS TRAIN TO TOUR GREAT BRITAIN

A train, the exterior of which will consist entirely of glass with the exception of the roof, is being prepared for a tour of Great Britain in the winter. The exterior of the coaches is being covered with blue mirrored Vitroflex consisting of 120,000 pieces of mirror. Inside there will be glass floors and walls and glass pictures. A bathroom will be lined with Vitrolite and there will be demonstrations of armourplate glass which bends without breaking. Examples of the new glass bricks will be also on view. There are some 200 varieties of constructional and decorative glass in Great Britain, and the train is being designed to display as many of them as possible to the trade and public in London and most of the other principal towns in England, Scotland and Wales. The train is being equipped by Pilkington Brothers Limited, of St. Helens, Lancashire.

* * *



[*Reproduced by permission of the Proprietors of "Punch"*

The British character—love of travelling alone

RAILWAY SPEEDS IN 1867

Name of Town	Miles	Hr.	Mn.	M.p.h
GREAT WESTERN				
Reading	36	0	44	49·1
Oxford	63½	1	23	45·9
Bath	106¾	2	24	44·5
Birmingham	129¼	3	0	43·1
Exeter	193¾	5	0	38·8
Gloucester	114¼	3	20	34·3
Birkenhead	228½	6	50	33·4
Weymouth	168½	5	15	32·1
Milford	285	10	0	28·5
Penzance	328	11	52	27·8
NORTH-WESTERN				
Rugby	82¾	2	0	41·4
Chester	178½	4	23	40·7
Holyhead	264	6	40	39·6
Edinburgh	400	10	30	38·1
Perth	469¼	12	19	38·1
Glasgow	405¼	10	42	37·9
Birmingham	113	3	0	37·7
Manchester	188½	5	0	37·7
Liverpool	201¾	5	30	36·7
Aberdeen	559½	15	55	35·2
Inverness	613¼	18	5	33·9
GREAT NORTHERN				
Peterborough	76¼	1	37	47·2
Manchester	201	4	45	42·1
York	191	4	40	40·9
Newcastle	275	6	55	39·8
Edinburgh	399½	10	30	38
GREAT EASTERN				
Colchester	51¼	1	15	41
Cambridge	57½	1	30	38·2
Norwich *viâ* Cambridge	126	3	30	36
Yarmouth *viâ* Colchester	121	3	35	33·8
SOUTH-EASTERN				
Dover	88	1	55	45·9
Ramsgate	97	2	50	34·2
Hastings	74	2	12	33·6
Maidstone	43	1	20	32·3
Reading	67	2	45	24·4
BRIGHTON				
Brighton	50½	1	15	40·4
Portsmouth	85	2	25	35·2
Hastings	76	2	15	33·8
MIDLAND				
Leicester	97½	2	10	45
Leeds	201	4	45	42·3
Manchester	182	5	5	35·8
CHATHAM AND DOVER				
Dover	78	1	58	39·7
Chatham	34½	0	55	37·4
Margate	73¾	2	25	30·5
SOUTH-WESTERN				
Basingstoke	47¾	1	15	38·2
Exeter	171½	4	58	34·5
Southampton	78¾	2	20	33·8
Portsmouth	74	2	20	31·7
Weymouth	147¼	4	50	30·5
Reading	44	1	36	27·5

Table of speeds of express trains to the chief towns on the nine principal railways having termini in London, reproduced from "Engineering" of July 19, 1867. Reference to this was made in these columns last week

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

VICTORIA

Reversal of Suburban Stock

Almost the whole of the Melbourne suburban passenger stock has recently been reversed in accordance with practice in force for the past seven years. Reversal is carried out regularly during the winter months to enable the weather effect on the paintwork to be more evenly distributed, as it is found that the paint on the north side deteriorates more rapidly than on the south. A very substantial saving in maintenance charges has been effected since reversal has been practised, repainting being necessary only once in three instead of once every 2½ years previously. One train is run round a triangular route every weekday, special marking enabling the traffic staff to know whether a train has been turned or not. This year the marked side will be on the north side of all trains when they have been reversed.

New Slow-Combustion Stove for Dining Cars

A new type of slow-combusion cooking stove is now being fitted in the new Government Railways dining cars. Although a top-plate heat up to 1,000° F. is provided, the new stove is so well insulated that practically no exterior radiation takes place except over the limited area of the top-plate for cooking utensils. Only a small quantity of coke is consumed, stoking being necessary only twice a day. If anthracite is used, from 10 to 15 lb. only are consumed in 24 hr. This type of stove is also scientifically ventilated, with the result that fumeless, odourless cooking is possible, a most important matter in a dining car.

INDIA

Wedgwood Report and Assembly

The discussion on the Indian Railway Inquiry Report in the Central Legislative Assembly on August 27 ended inconclusively on account of want of time. A large number of members who wished to take part in the debate had no opportunity to speak. The Government undertook to find time to continue the discussion at the end of official business, provided all official business was concluded. Most of the speeches were directed against the findings of the committee. Sir Sultan Ahmed, Honourable Member for Railways and Commerce, assured the House that the Government of India was not only anxious to make the State-owned railways in India a financial success, but was determined to make them in efficiency, economy, management, discipline and treatment of the people whom they served, far better than any other comparable system of the world. The Government was also anxious that the railways, consistently with a high standard of efficiency, should continue to recruit and train Indians in various departments of activities. In regard to the proposal of the Wedgwood Committee to import from Great Britain men to fill the posts of Commercial Officer, Press Liaison Officer and Statistical Officer, as also certain subordinate supervisory posts in the technical establishments, the Railway Member declared that no appointments to such posts would be made from abroad until the Government was convinced that suitable recruits could not be obtained in this country. The Government considered that there was no necessity for importing people from outside to fill these posts.

In regard to rail-road competition, a comprehensive review for the regulation of road transport had been prepared by the Department of Industries, and two officers of the department were on tour discussing the draft with the Provincial Governments. On their return, the matter would be further examined by the Government, and it was hoped that a Bill would be introduced next session.

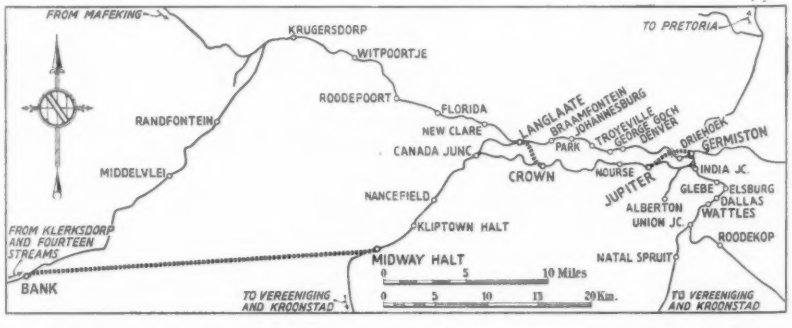
In order to remove any misapprehension and uneasiness that might exist in regard to the Central Government's commitments to the Provincial finances under the new constitution, Sir Sultan Ahmed stated that whatever might be the final decision of the Government on the disposal of railway surpluses, the amounts payable to the Provinces under the Niemeyer award would be fully met.

SOUTH AFRICA

New Lines for the Rand

In connection with the Reef improvement works, three new lines are to be constructed, namely, Germiston—Jupiter, Crown—Langlaagte, and Midway—Bank. These new links are to divert traffic from the overtaxed line between Randfontein and Germiston to the Rand mineral line, as shown in the sketch map below. The Midway—Bank connection will provide a direct connection from the Klerksdorp main line to the Rand mineral line, and will be the shortest route from Klerksdorp to Germiston by some seven miles, as well as relieving the Langlaagte line.

The Germiston—Jupiter line will be double track, 3 miles 10 ch. in length, 57 ch. shorter than the existing route, and it will eliminate seven crossings on the level over other running lines. It will pass under the Langlaagte line near Driehoek, and will have 107 deg. less curvature. The Crown—Langlaagte line will eliminate two reversals of traffic from the Krugersdorp direction to the mineral line, one at Langlaagte and the other at Canada junction. It will be 3¾ miles long. The Midway—Bank line will be 21 miles in length.



Sketch map showing the three new lines to be constructed for the relief of congested sections in the Rand area, South African Railways

UNITED STATES

The Popularity of the Challenger

At the beginning of the summer of 1935 the Union Pacific, in connection with the Chicago & North Western Railway, ceased to run coaches and tourist sleeping cars on its Chicago—Los Angeles Limited, and instead ran them as a second part of this train to cater specially for the class of passenger that travels tourist class on an ocean liner. In August of that year this train was named the Challenger and given an identity of its own. So popular did it become that in the spring of 1936, the 47 coaches, 16 Pullman tourist sleepers, and 5 dining cars, used in its composition, were remodelled and modernised, with resultant increased comfort. Last April a lounge car was added to each train. The Challenger is now one of the best paying trains in the U.S.A., carrying on an average 300 passengers each way daily, mainly over long distances, and this is mostly new business.

Special Service for Women, Families, and Invalids

The efficient stewardess service and low-priced meals are two of the most prominent features of these trains. In addition, two cars are reserved exclusively for ladies, one of them for women and children, and may not be entered by men, even the train staff

having to obtain the permission of the stewardess before entering. Free pillow service is available, and tickets are not examined at night, nor is noise allowed at stations at which these trains halt during night-time. After 10 p.m. all bright lights are switched off, leaving indirect or blue lights only. Air-conditioning is equipped throughout. The stewardesses are graduate nurses of the American Nurses' Association, and are specially selected; invalids, mothers with children, and elderly passengers are their special charges.

Progress of Elimination of Level Crossings

Out of the 3,351 level crossings included in the Federal Government's programme of elimination and protection, 1,783 had been dealt with by the end of July, at an estimated cost of $100,581,000; of this sum $98,836,800 were provided from works programme funds. Of the completed works, 241 crossings were reconstructed and 267 were protected by signals or by other means, and no fewer than 1,275 had been eliminated. Work was then also in hand to secure the elimination of 597 more level crossings, and on 102 reconstructions and the protection of a further 363 crossings. In addition, funds had been allotted for the elimination of another 133, the reconstruction of 23, and the protection of 350 crossings, which works had been sanctioned but not by that date put in hand.

MEXICO

New Constructions

Five new construction works at present in hand to connect up existing lines or to connect existing systems with the coast, together aggregate about 1,000 miles of line, and are estimated to cost $42,000,000. The largest of these projects is the Southeastern line, which will link the Government system in the State of Yucatan with the main system of the country, and will be 475 miles in length, and cost $23,000,000; the formation of 87 miles has been completed and 35 miles of track (standard gauge) have been laid.

An important narrow-gauge line will connect Ixcaquixtla—the terminus of the Huajuapam branch of the Mexican Railway—with the Pacific coast, a distance of 192 miles, and will cost about $4,200,000; some 51 miles of formation and 30 miles of platelaying have been completed. Another standard-gauge but otherwise somewhat similar connection will give the National system an outlet to this coast at Zihuatanejo. It will leave the parent line at Caltzoutzin and have a 17-mile branch line to Apatzingan.

To Link Mexico with Western California

A fourth project, intended eventually to connect Fuentes Brotantes, on the Southern Intercalifornia Railroad, with the Southern Pacific of Mexico system, is at present under construction to the extent of the western section between Fuentes Brotantes and Punta Penasco, about 100 miles in length. This section will cost some $1,700,000. When the whole scheme comes to fruition, direct connection between Western California and the whole of the Mexican system will be effected.

SPAIN

Condition of Railways under Valencia Government

As a result of stringent coal economy, passenger services on the railways of Government Spain have been reduced to a minimum, and the principal cities are connected only by a single train daily. Despite its prodigious length, the daily train from Valencia to Barcelona is greatly overcrowded, and it is usually necessary to book a seat two or three days in advance. Due to insufficient locomotive power, this run takes approximately 12 hr. for the distance of about 400 km. (say 250 miles).

The rolling stock has become very shabby, but the many gangs working along the line indicate that the permanent way is not being altogether neglected. Services on the electrified lines in Catalonia appear to be working normally.

Serious Derailment Resulting from Level Crossing Collision

It is reported that a level crossing accident in June, near Murcia, resulted in the derailment of a passenger train in which nearly 100 persons were killed or injured. As a result of censorship regulations, no details have been released.

The different gauges and single track have greatly hampered the use of railways for war purposes. The entire army is now in the process of being motorised, several thousand new lorries entering the country weekly, so in the future the railways will play a less important role in the war than hitherto.

FRANCE

The Effect of the 40-hr. Week

The exact effect of the introduction on the railways of the 40-hr. week has not yet been felt, as points are still unsettled with regard to Articles 17 and 50—and to a lesser degree 15 and 49—of the Act of January 18 last. But it is of interest to note that the estimated increase of 80,000 in the number of employees is based on the assumption that a certain amount of repair work now done in railway shops will in future be handed over to private firms. Actually, due to growing traffics and longer holidays, the numbers employed have risen from 411,000 last summer (415,000 in the busiest holiday months) to nearly 505,000 at present, an addition of 94,000. The average wage estimated for 1937 is fr. 20·849, so that in a full year—which 1937 will not be, as the higher rates of pay and additional recruitment came into force only on April 1 or later—even the 80,000 estimate would involve an additional expenditure of fr. 1,670 million.

FRANCE & BELGIUM

Division of Traffic between Dunkerque, Ghent and Antwerp

Competition between the ports of Antwerp and Rotterdam, which for so long has hampered Dutch-Belgian relationships, is now overshadowed by the competition between Dunkerque, Antwerp, and Ghent, threatening to strain Franco-Belgian relations. For some weeks past, negotiations have been carried on between Brussels and Paris on the subject of a new distribution of traffic from Alsace and Lorraine between these three ports. Dunkerque has submitted claims against the French Government, to offset privileges granted to Belgian ports as a result of the freedom from surtax on warehousing since the Treaty of Versailles. Recently, French and Belgian representatives, conferring at Paris, drew up a formula, but this has not yet been ratified by the Governments.

According to the scheme envisaged, a traffic—in products for which Dunkerque specially competes—of some 400,000 *tonnes* per annum would be guaranteed to Belgian ports, during a five-year period, and, by way of compensation, German coal would be taken to France via Belgian ports. Discussions are still in full swing between the French and Belgian Governments, and a satisfactory agreement is hoped for, but meanwhile port interests, especially in Belgium, are chafing at the delay. The problem arises from the Franco-Belgian commercial treaty of 1928, which does not allow of discrimination. Antwerp is privileged as regards potash, for which large depots have been established.

CHINA

New Kowloon-Canton Air-Conditioned Car

On June 14 the Kowloon—Canton Railway (British Section) introduced a new air-conditioned luxury lounge car, the *Aurora*, on the Kowloon—Canton day services, leaving the former terminus at 8.25 a.m., and returning on the 4.50 p.m. train from Canton. It is noteworthy that although this is the first air-conditioned coach in China, no extra charge, over and above the ordinary first class fare, is made for travel in it; as this fare is only just over ½d. a mile, this must be about the cheapest air-conditioned travel in the world.

The car, which seats 31 passengers, was constructed at the railway workshops at Hung Hom, under the direction of Mr. James Smith, A.M.I.Mech.E., Chief Mechanical Engineer. Special illustrated advertisements call attention to the car.

BRITISH RAILWAY STATISTICS

"The Railway Gazette" monthly table for May, 1937, as compared with May, 1936, compiled from the Ministry of Transport Statement No. 210

Description	Great Britain*	G.W.R.	L.N.E.R.	L.M.S.R.	S.R.
PASSENGER TRAIN TRAFFIC—					
Number of pass. journeys (ex. season ticket holders)	149,186,822	9,121,982	19,924,188	30,197,600	25,185,648
Increase (+) or decrease (—)	+ 43,907,700	+ 1,702,728	+ 4,675,389	+ 4,948,549	+ 6,665,618
Passenger receipts (excluding season ticket holders)	£5,685,966	£728,102	£1,101,738	£1,762,319	£1,199,162
Increase (+) or decrease (—)	+ £1,315,889	+ £155,276	+ £236,332	+ £366,068	+ £238,376
Season ticket receipts	£772,964	£46,010	£129,903	£203,450	£258,923
Increase (+) or decrease (—)	+ £56,871	+ £78	+ £8,645	+ £12,773	+ £27,818
Parcels and misc. traffic receipts (excluding parcels post)	£1,091,942	£205,831	£321,635	£413,536	£131,595
Increase (+) or decrease (—)	— £23,854	+ £197	— £4,726	— £16,793	— £1,041
FREIGHT TRAIN TRAFFIC—					
Freight traffic (tons) (excluding free-hauled)	22,436,478	5,319,865	10,252,520	10,523,113	1,233,965
Increase (+) or decrease (—)	+ 2,329,438	+ 739,839	+ 966,023	+ 1,188,952	+ 91,564
Net ton-miles (excluding free-hauled)	1,321,565,856	247,512,276	448,063,726	535,766,264	54,938,830
Increase (+) or decrease (—)	+ 170,789,382	+ 39,716,534	+ 58,205,889	+ 62,472,215	+ 6,635,783
Average length of haul (miles) (excluding free-hauled)	58·90	46·53	43·70	50·91	44·52
Increase (+) or decrease (—)	+ 1·67	+ 1·16	+ 1·72	+ 0·20	+ 2·24
Freight traffic receipts	£7,017,767	£1,210,000	£2,308,142	£2,917,000	£360,000
Increase (+) or decrease (—)	+ £534,001	+ £105,700	+ £174,142	+ £237,000	+ £12,545
Receipts per ton-mile	1·274d.	1·17d.	1·24d.	1·31d.	1·57d.
Increase (+) or decrease (—)	— 0·078d.	— 0·10d.	— 0·08d.	— 0·05d.	— 0·15d.
Freight train-loads: Average train-load (tons)	132·70	140·43	136·75	130·24	110·48
Increase (+) or decrease (—)	+ 8·59	+ 13·18	+ 6·75	+ 7·17	+ 10·46
Net ton-miles—					
Per train engine-hour	1,027·50	1,097·62	1,084·74	979·15	859·42
Increase (+) or decrease (—)	+ 8·34	+ 43·70	+ 10·65	— 21·78	+ 67·48
Per shunting-hour	931·72	849·15	1,022·26	963·46	609·00
Per total engine-hour	488·63	478·76	526·29	485·62	356·43
Net ton-miles per route-mile per working day	3,037	3,013	3,266	3,570	1,233
Increase (+) or decrease (—)	+ 392	+ 458	+ 430	+ 434	+ 124
Wagon-miles. Total	369,807,602	66,985,126	130,880,215	153,761,045	17,576,882
Increase (+) or decrease (—)	+ 30,010,149	+ 6,071,567	+ 12,975,705	+ 11,908,069	+ 439,416
Percentage of loaded to total	67·27	68·86	64·34	69·01	68·16
Wagons per train. Total	34·96	35·51	35·32	34·77	32·94
Increase (+) or decrease (—)	+ 0·56	+ 1·09	+ 0·30	+ 0·48	+ 0·44
Loaded	23·52	24·45	22·73	23·99	22·45
Empty	11·44	11·06	12·59	10·78	10·49
Train-miles. Coaching—Per train-mile	15·19	14·19	14·47	14·49	17·75
Per engine-hour	12·09	11·20	11·14	11·06	14·64
Train-miles. Freight—Per train-hour	9·12	9·51	9·33	8·80	9·48
Per engine-hour	3·68	3·43	3·90	3·73	3·18
Engine-miles. Total	48,604,481	7,645,747	13,565,328	18,247,351	6,321,318
Increase (+) or decrease (—)	+ 1,939,675	+ 277,422	+ 809,472	+ 869,499	+ 95,657
Mileage run by engines. Total train-miles—					
Coaching	24,747,403	3,365,603	5,758,569	8,255,493	4,707,353
Freight	10,578,689	1,886,580	3,705,082	4,422,159	533,618
Engine-hours in traffic. Total	5,130,780	876,530	1,542,508	2,016,811	507,556
Increase (+) or decrease (—)	+ 308,557	+ 53,961	+ 114,091	+ 144,980	+ 6,314
Shunting miles per 100 train-miles—					
Coaching	7·25	7·00	6·48	7·68	8·00
Freight	70·71	82·21	65·51	65·97	94·92

Passenger Traffic Statistics: Number of journeys, receipts, and receipts per journey (excluding season ticket holders)—May, 1937

Subject	Great Britain	G.W.R.	L.N.E.R.	L.M.S.R.	S.R.	Cheshire Lines	Liverpool Overhead	L.P.T.B.†	Mersey
Full fares—									
Pass. journeys	60,127,127	989,490	1,792,364	2,115,898	4,916,718	16,630	173,104	48,667,932	85,473
Gross receipts	£1,302,626	£90,817	£157,835	£150,518	£262,349	£2,827	£1,750	£611,156	£1,488
Receipts per pass.	5·20d.	22·03d.	21·13d.	17·07d.	12·81d.	40·80d.	2·43d.	3·01d.	4·18d.
Reduced fares—									
Excursion and week-end—									
Pass. journeys	56,048,785	5,733,417	13,086,133	19,444,785	13,009,977	548,433	146,512	2,026,674	698,241
Gross receipts	£3,482,645	£529,440	£770,109	£1,337,229	£707,208	£36,609	£1,446	£44,968	£11,506
Receipts per pass. journey	14·91d.	22·16d.	14·12d.	16·50d.	13·05d.	16·02d.	2·37d.	5·33d.	3·95d.
Workmen—									
Pass. journeys	27,619,949	1,746,951	3,760,411	7,187,916	6,077,328	250,600	202,770	7,234,878	206,966
Gross receipts	£401,619	£25,845	£61,040	£116,292	£99,776	£4,350	£1,628	£79,530	£1,886
Receipts per pass. journey	3·49d.	3·55d.	3·90d.	3·88d.	3·94d.	4·17d.	1·93d.	2·64d.	2·19d.
Other—									
Pass. journeys	5,359,978	644,248	1,279,507	1,434,577	1,178,963	38,484	45,235	616,758	14,357
Gross receipts	£459,134	£72,043	£104,544	£139,790	£126,794	£3,841	£291	£5,901	£227
Receipts per pass. journey	20·56d.	26·84d.	19·61d.	23·39d.	25·81d.	23·95d.	1·54d.	2·30d.	3·79d.
Total—									
Pass. journeys	149,186,822	9,121,982	19,924,188	30,197,600	25,185,648	854,295	567,621	58,546,242	1,005,037
Gross receipts	£5,685,966	£728,102	£1,101,738	£1,762,319	£1,199,162	£47,770	£5,115	£741,555	£15,107
Receipts per pass.	9·15d.	19·16d.	13·27d.	14·01d.	11·43d.	13·42d.	2·16d.	3·04d.	3·61d.

* All standard gauge railways

† Includes passengers originating on the railway undertakings, and on the Whitechapel and Bow Joint Railway

THE MIDLAND TIMETABLE REORGANISATION

A correspondent reviews the reorganisation of train services on the Midland section of the London Midland & Scottish Railway

SINCE the timetable revision of July, 1901, which first put the old Midland on the map as regards Anglo-Scottish train services, St. Pancras station has certainly witnessed no such drastic alteration of its express arrivals and departures as that which will take effect on September 27. Brief reference has already been made, in the September 3 issue of THE RAILWAY GAZETTE, to the labour and preparation such a scheme entails, but it may be added that the new programme seems to have been drafted on a very liberal mileage scale—particularly in the up direction—and that this is the first important revision of any train service made since the grouping, not excepting the Southern steam alteration of July, 1924. And to alter the expresses into and out of St. Pancras is no easy matter, for, although the local service terminating at Hendon, which complicated matters in 1901, no longer exists, the residential traffic to stations from Mill Hill to Bedford has grown enormously, and the departure and arrival times of fast residential trains are even more "sacred" than those of long-distance expresses. Yet all passenger trains, besides having to pass through the Belsize tunnel bottle-neck, are confined to one down and one up road north of Harpenden, and in this outer suburban area is situated Luton—a town of great importance to the Midland, which has perhaps hardly received the consideration it deserves in the new timetable—still equipped with a station ill-adapted for clearing locals promptly out of the path of expresses.

So far as booked speeds are concerned, with the locomotive power now available, consistent punctuality should be possible, although the obvious desire to bring as many runs as possible fractionally over the 60 m.p.h. mark has resulted in relatively harder schedules in the down direction (to Leicester) than in the up, and some of the intermediate runs, as, for example, Kettering over Desborough summit to Leicester in 31 min.—are tightly timed. But the spectacular 30-min. timing from Luton to St. Pancras, instituted in the autumn of 1935, still remains the most difficult in the timetable to observe, and the new non-stop 77-min. run over the Derby to Manchester length of 61·4 miles, which includes the steep ascent to Peak Forest summit, is identical with the last pre-war booking of the 12 noon from St. Pancras.

Possibilities for the Future

In spite of the pleasure with which this restoration of Midland running is naturally welcomed, it is hard to avoid the conclusion, in these days when "pooling" and "no competition" are the texts of so many chairmen's speeches, that a great opportunity has been lost for a real fusion of services between St. Pancras and Marylebone and the Midlands. The expresses between London and Sheffield are particularly suitable for a genuine experiment in pooling; they serve similar intermediate towns, and their engagements north of Sheffield are not of paramount importance; indeed, the latest revision has turned through Sheffield what was once the crack Leeds—London train, and has, most wisely, avoided any resumption of long non-stop runs other than St. Pancras—Sheffield. Even if it were necessary for both routes to maintain a service at certain popular hours, the new timetable offered a great opportunity for a better spacing-out of the bulk of the expresses of both companies.

It is hardly fair to criticise the details of a scheme which is as yet only in its first stage, for until further tests have determined the amount of acceleration practicable between, for instance, Derby and Bristol, and Leeds and Carlisle, the full benefit of the new schedules in the South cannot be felt. Several cross-country services—such as Birmingham-Leicester-Peterborough—need revision, and more attention might be given to connections, both "foreign" and with other sections of the L.M.S.R. For example, the principal acceleration, up to date, in the West—of the 5.22 p.m. from Leeds, which reaches Bristol at 10.7 instead of 11.10—still fails to establish connection with the G.W.R. 6.30 p.m. from Paddington to Plymouth, while the previous service from Leeds, at 2.50, entails a wait of 80 min. at Bristol to catch this train. If only it should prove possible, when further schemes mature, to revert to the 9.30 a.m., 11.30 a.m., and 1.30 p.m. departures from St. Pancras for Scotland of 1901, with their corresponding up trains, not only might this difficulty be removed and a late afternoon service be restored from Carlisle to Yorkshire (there is now no train between 2.45 and 8.25 p.m.), and departures from Leeds and Sheffield to London provided later than the present 5.30 and 6.21 p.m. trains, but the St. Pancras and Leicester service would have a full sequence of half-hour departures (and at hours where Marylebone offers no train). Again, by the running of an Edinburgh portion on the 9.30 a.m., the present 9.5 a.m. down (which is no longer tied to the East Coast Aberdeen service at Edinburgh, Waverley) might be converted into the fast early morning train to the provinces which is still so badly needed, and a very lightly-loaded working would be saved between Leeds and Carlisle. So many provincial towns depend on the old Midland for their communication with Scotland, that there appears now to be a case for the restoration of the third day service, and, with the improved connections at Carlisle to and from the North of Scotland rendered possible by grouping, the third train would be much more useful than in pre-war days. It is to be hoped, too, that something may yet be done to bring business men from Leicester into London earlier than 9.55 a.m. (the pre-war arrival was 9.20, and the new timetable gives no 99-min. run up from Leicester earlier than 10.21 a.m.), and to improve the service to Nottingham by the new 8 p.m from St. Pancras, whose prototype, at 8.15 p.m., ran via Leicester *and* Nottingham.

There are also certain marked inferiorities in down services over the up, or *vice versa*, some of which might be avoided if the Continental practice of giving similar stops in each direction to pairs of "balancing" trains were adopted here. A conspicuous example occurs in the communication between the Luton, Bedford, and Northampton area and Leeds and Scotland. In the down direction, passengers can leave Bedford, for example, at 10.34 a.m. and 12.29 p.m. to join, thanks to useful new stops at Kettering, the 10 a.m. and 12 noon expresses from St. Pancras. But, in the up direction, they cannot reach Bedford till 6.55 and 9.35 p.m. off the Scotch expresses due in London at 6.16 and 9.7 p.m., which is rather a serious defect on a system so largely concerned with provincial towns. It is curious, too, to find that whereas the down Yorkshireman provides the 172-min. non-stop service from London to Sheffield, the up Yorkshireman now runs *via* Nottingham, and the 9.50 a.m. from Leeds gives the 172-min. up run from Sheffield.

The St. Pancras—Manchester trains must, of course, be

looked upon solely as adjuncts to and allies of the Euston service, with which they were once keen and successful competitors. It is disappointing, therefore, that the 6 p.m. Lancastrian from Euston so heavily taxed, a 5.30 p.m. departure from St. Pancras to Manchester (corresponding with the pre-war 5.35 p.m.) still has not materialised. It would appear possible also that the new 6.20 p.m. from Manchester to St. Pancras may prove too late a departure to serve its purpose of relieving the 5.45 p.m. Comet from London Road, for Manchester is a city in which business largely ceases around 5 p.m., as is proved by the number of long-distance residential trains which leave at about this hour; even the pre-war London Road to Euston service, at its old 6.15 p.m. departure, was a little too late for business requirements and did not load heavily. But in any case so many years have elapsed since the Midland was an effective route to Manchester that the new trains will take time to establish themselves as regards through traffic. Their present form is not necessarily permanent.

L.M.S. Midland Division—Journey Time From and To London

City	Year	Down			Up			Complete service	
		No. of trains daily	Fastest time	Average journey time	No. of trains daily	Fastest time	Average journey time	No. of trains daily	Average journey time
			hr. min.	hr. min.		hr. min.	hr. min.		hr. min.
Manchester ... (190 miles)	1914	7	3 40	4 02	7	3 40	3 58	14	4 00
	1936–7	6	3 55	4 11	7	3 57	4 12	13	4 11
	1937–8	6	3 35	3 49	7	3 38	3 51	13	3 50
Sheffield ... (158¾ miles)	1914	9	3 07	3 25	9	3 02	3 24	18	3 24
	1936–7	7	3 02	3 19	9	3 03	3 19	16	3 19
	1937–8	8	2 52	3 10	11	2 52	3 07	19	3 08
Nottingham ... (123¼ miles)	1914	9	2 15	2 32	9	2 15	2 35	18	2 34
	1936–7	8	2 09	2 29	9	2 15	2 30	17	2 30
	1937–8	9	2 03	2 19	9	2 03	2 17	18	2 18
Leicester ... (99 miles)	1914	10	1 46	1 51	12	1 45	1 50	22	1 50
	1936–7	10	1 46	1 54	12	1 45	1 50	22	1 52
	1937–8	11	1 39	1 45	12	1 39	1 44	23	1 44

Comparisons with the Past

The annexed table gives some idea of the completeness of the improvement effected by the reorganisation in the average journey time between St. Pancras and the cities of Manchester, Sheffield, Nottingham, and Leicester. In the table comparison is made of the service that operated in 1914, immediately before the war, the service operating up to September, 1937, and the service which will be brought into operation on September 27. The fastest overall times are shown in each of these periods, and the average journey time and the number of trains operating, both down and up, together with a summary of the total number of trains and their average time. The trains selected are all the express trains leaving each end of the route between 7 a.m. and 8.20 p.m.—that is, within the extreme compass of the ordinary business day. As compared with 1914, the only trains of importance which have not been restored, as previously mentioned, are the 5.35 p.m. from St. Pancras to Manchester, and the 1.30 p.m. from St. Pancras to Leeds and Glasgow, so that the down services from St. Pancras to Manchester and Sheffield are still one short in number of those given in 1914.

As regards the fastest times shown in the table, the 3 hr. 40 min. of 1914 between St. Pancras and Manchester in each direction included one stop only, at Leicester, the trains concerned avoiding Derby by way of Chaddesden sidings, but the 3 hr. 35 min. down and 3 hr. 38 min. up of the new timetable include stops at both Leicester and Derby. On the other hand, non-stop service is now given in both directions between St. Pancras and Sheffield, whereas the previous fastest trains incorporated one stop (Leicester or Trent Junction) in their schedules; the non-stop journey of 158·3 miles is the longest on Midland metals since the war. In average overall times there has been a progressive reduction from 1914 to 1936/7 and 1937/8 in the case of the St. Pancras-Sheffield service, but the St. Pancras-Manchester average times were 11 min. slower in 1936/7 than in 1914, and have now been speeded up by no less than 21 min. The London-Leicester times to date have averaged a little slower than in 1914, but now, in common with the other services shown, will be materially better than at any previous period in Midland history, and the same applies to the fastest times, not only between St. Pancras and Leicester, Nottingham, Sheffield and Manchester, but also to and from Wellingborough, Kettering, Melton Mowbray, Derby, and elsewhere. As compared with pre-war days, practically the whole of the express trains between St. Pancras and Leeds, a number of which used the direct line via Staveley Works, now run via Sheffield—a diversion which includes the severe climb from either direction to Bradway tunnel—but the average time of journey between St. Pancras and Leeds will be 5 min. less in the down direction and 3 min. less in the up direction than in 1914.

As regards the number of trains shown in the table as operating on each service, certain trains are omitted from the totals (*e.g.*, the 4.55 p.m. from St. Pancras to Leeds and Bradford, which has been omitted from the Sheffield total because it is passed *en route* by the non-stop 5.10 p.m. Yorkshireman) and there are one or two other cases in which a slower train, starting immediately after or arriving immediately before a fast train, has been omitted because the through passenger would almost inevitably choose the latter. In all the Midland reorganisation, perhaps the most remarkable feature is the service given from Sheffield to St. Pancras in the mornings, at 8.44, 9.0, 10.13, 10.43, and 11 a.m., in times varying from 2 hr. 52 min. to 3 hr. 8 min. For the rest of the day, too, the spreading of the fast services is one of the best features of the new Midland timetable, and compares very favourably with some of the pre-war Midland services, in which there were such gaps as 1.56 to 5.0 p.m. in the service from Sheffield to St. Pancras.

(*See editorial article on page* 308.)

Margate Scenic Railway Limited.—At an extraordinary general meeting, held at Astor House, Aldwych, W.C.2, on September 8, it was resolved that the company be wound up voluntarily and that Mr. Ivor George Milne Iles be appointed the liquidator to conduct the winding-up. All creditors have been, or will be, paid in full, according to the official notice in *The London Gazette* signed by Mr. J. Henry Iles, Chairman.

RAILWAYS AND ROAD TRANSPORT SECTION

This section appears at four-weekly intervals

The Otto Beit Bridge in Rhodesia

A BEGINNING has been made towards the construction by the Beit Railway Trust of a suspension road bridge across the Zambesi River at Chirundu, which will link by a direct route the capitals of Southern and Northern Rhodesia, namely Salisbury and Lusaka. The bridge, which is being named after the late Sir Otto Beit, has been designed by Mr. Ralph Freeman, the designer of the Sydney Harbour bridge and the Birchenough bridge in Southern Rhodesia, and will have a main span of 1,050 ft. in length from tower to tower. The roadway will be 18 ft. wide, with a 3-ft. 6-in. pathway on each side. The construction will be undertaken by Dorman, Long & Co. Ltd. and the work is expected to take about two years. The Rhodesia Railways will convey the 3,000 tons of bridge material by rail from Beira to Lion's Den, a siding on the Salisbury—Zawi branch line, from which point a railway road motor service will transport the material to the bridge site, a distance of about 137 miles from the railway.

Road Transport in Travancore

IN this section a month ago we announced the decision of the Travancore Government, Southern India, to establish its own road motor services, and the appointment of Mr. E. G. Salter, late of London Transport Country Services, as Superintendent of Road Transport in the State. We now learn that as a preliminary to general bus management and operation, the Government has decided to take over the service between Cape Cormorin and Trivandrum, connecting at the latter point with the metre gauge system of the South Indian Railway. British vehicles have been chosen to inaugurate the State road motor services, an order having been placed for 60 Commer N3 chassis, 50 to have bus bodies and the remainder to be lorries. Travancore is a particularly suitable field for the adoption of diesel power, fuel oil there costing only a third the price of petrol, and accordingly all units will be fitted with Perkins Lynx diesel engines. As the chassis are all of the same type, mechanical parts are naturally interchangeable, and either the bus or the lorry body may be mounted as required. Travancore will thus start its road transport enterprise with a fleet having a flexibility adequate for all normal demands.

A Terrier Tested

AN eight-mile journey under its own power after being stranded in a flood for a week was the Spartan accomplishment of a South African Railways Leyland Terrier six-wheeler a short time ago. A recent issue of *The Leyland Journal* describes how the vehicle, a combined bus and van with 10-litre engine running on special delivery work in the Swaziland mountains, was overwhelmed by flood water while held up at a small drift crossing the dirt road. The driver and his mate just had time to scramble to safety before their bus was swept 31 ft. downstream and at length completely submerged. Even after the water had subsided, sudden currents kept carrying the bus to a new position, and complicating the work of the rescue party. Salved at last, after lying in the water for a week, the bus performed the 8-mile journey already mentioned. Mud and water had damaged pistons and main bearings, but after attention to these points new sleeves in two cylinders sufficed to restore oil consumption to normal. Today, after further twice-weekly service over a 100-mile route interrupted at intervals with 8-ft. potholes and frequent dried-up river beds, the bus is stated to be still mechanically perfect. It is now proposed to include the section where the Terrier met with its flooding adventure in the route of a regular service. Such a proposal will doubtless be considered with added confidence after experience with a vehicle having a margin of endurance so far superior to the conditions normally likely to be encountered.

French Transport Co-ordination in 1837

AT the same Cabinet meeting (on August 31 last) at which the French Government approved the formation of a National Railways Company, a decree was adopted for the co-ordination of transport throughout the country. The fact has already been pointed out in THE RAILWAY GAZETTE that the arrangements for amalgamating all the French main-line railways are taking place at the beginning of the second century of the country's railway development, and it is also a coincidence that the first real passenger railway in France, the centenary of which has just been celebrated, provided from the first an example of voluntary rail-road-water co-ordination. When the Paris—Saint Germain Railway was opened, on August 26, 1837, it extended only as far as Le Pecq on the opposite bank of the Seine from Saint Germain. To reach the latter point, passengers were provided with a connecting bus service at a fare of 25 centimes, and the journey from Paris to Saint Germain was actually a combined rail and road effort until 1847. This pioneer railway company had far more comprehensive ideas of co-ordination, however, than a mere bus connection from the centre of the town to an outlying station. From the beginning, the company realised that its line, although short, provided a considerable saving in distance and time over the winding river route of the Seine, and therefore announced a hundred years ago that a steamer service was being arranged to connect with the railway at Le Pecq and to take passengers to Rouen in 8 hours.

A Family Connection with London Buses

FOR more than half a century the families of Lulham and Pound were intimately connected with the development of the London bus, and, although that direct connection was broken 25 years ago when the Underground group headed by Sir Edgar Speyer bought control of the old L.G.O.C., it is impossible not to regard the recent death of Sir John Lulham Pound as the severance of a link with pioneer days. Sir John's grandfather—Mr. Thomas Lulham—joined the board of the London General Omnibus Co. Ltd. in 1860, only four years after its formation, and presided over its affairs as Chairman from 1874 to 1878. His daughter, Harriet Lulham, married a London portmanteau manufacturer named John Pound, and the

latter joined the L.G.O.C. board in the year that his father-in-law became Chairman. John Pound was appointed Chairman in 1879 and continued to hold that office until 1908 when the first great amalgamation of London motorbus companies took place, the L.G.O.C. then absorbing the London Road Car Co. Ltd. and the Vanguard Motorbus Co. Ltd. He was Lord Mayor in 1904-5 and was created a baronet. It was his son, John Lulham Pound, whose death on September 7 (recorded in our issue of September 10) severs the family link with London buses. Sir Lulham had actually retired from the bus industry when he succeeded his father in the baronetcy in 1915, and it was as "Mr. Lulham Pound" that he is remembered by the older busmen who well recall his very active directorship from 1891 to 1912, throughout the whole period of the changeover from horse to motor traction. He was a member of the Court of Common Council from 1895 to 1915; Alderman of Aldgate Ward from 1915 to 1921; and representative of the City on the L.C.C. from 1919 to 1928. Sir Lulham was Master of the Guild of Freemen in 1923 and Master of the Leathersellers' Company in 1928-9.

Building by Tersons

MOST persons think of Carter, Paterson & Co. Ltd. as an undertaking concerned exclusively with the operation of road vehicles, and forget those sides of the organisation which are engaged in very important supplementary work. Among the latter must be included the activities of Tersons, the company's building department, which has been extremely busy during the last six months or so making it possible for certain depots to accommodate increasing traffic. South Coast Carriers Limited (a Carter, Paterson associate) figures prominently in these developments. The Boscombe depot—built in 1935 by Tersons—has been extended a further 60ft. and alterations have been made to the office and mess accommodation. The Richmond Road premises in Bognor have been rebuilt; and an extension of some 60ft. has been completed at the Carter, Paterson depot at Brighton.

Carter, Paterson's Harrow depot has been extended very considerably to provide storage accommodation for the Grange Furnishing Stores Limited; at Wealdstone, Tersons is building a social club; and a block of garages at Neasden has been completed recently. Moreover, a considerable quantity of work has been undertaken by Tersons on behalf of the Southern and Great Western Railways. New platform buildings have been erected at the Southern Railway stations at Waterloo, Surbiton, Richmond, Albany Park, and Strawberry Hill. A new building has been completed for the locomotive foreman at Guildford, and at the moment Worcester Park station is being pulled down for rebuilding. For the Great Western Railway, a sub-station has been built at Old Oak Common halt, and a goods shed at Brentford.

Road Transport in Australia

THE effect of the substitution of road for rail transport in Australia is shown by the increase in the average rail haul of goods and livestock. In 1926-27 this was about 100 miles, but in 1929-30 and 1930-31 a marked increase occurred, and by 1935-36 the average for the mainland States had reached 125 miles. Meanwhile, various legislative measures were passed in the different States and their order of sequence may be of some interest, as indicating how control of road traffic was gradually extended. In 1928 Victoria passed a Motor Omnibus Act, which tended to restrict road passenger traffic, and in the same year the licence fee for heavy passenger-carrying vehicles or goods lorries on certain routes competing with railway traffic, was increased five-fold in Queensland. During 1930 the Road and Railway Transport Act was passed in South Australia, and in New South Wales a Transport Act, restricting road passenger transport to some extent, was followed a year later by a revision of that Act, regulating lorry traffic also. In Queensland there was little restriction until the State Transport Act of 1932 came into operation in the following year. It was in 1933 also that road goods traffic in Victoria was fully controlled under the Transport Regulation Act, and the Transport Board began to make itself felt in 1934. Finally in Western Australia the State Transport Co-ordination Act became operative at the end of the latter year. All these measures had the effect of assisting railway traffic, and though the tendency has been for regulation to become stricter, its effect is often over-estimated. It is noteworthy, too, that, generally speaking, road goods traffic in private vehicles, over short hauls, and in the form of perishables has been left free. In fact, the Victorian Transport Board estimates that it has discretionary powers over only 3 per cent. of the commercial vehicles in that State, many of which have been granted licences. So that though this is, admittedly, the least severe State, it is obvious that road traffic control in favour of the railways—which are practically all State owned and worked is as lenient in Australia as can reasonably be expected anywhere.

Local Transport in Vienna

THE local transport facilities in Vienna, a city of 1,874,000 inhabitants and the scene this year of the 25th International Tramway, Light Railway, and Public Motor Transport Congress, present some interesting features, including tramways, buses, and a *Stadtbahn* or city railway. A horse tramway was opened as far back as 1840 to provide access to a pleasure park on the site of the present Nordwest Bahnhof, but it was abandoned two years later; a peculiarity was that the horse ran between shafts pushing one car and pulling another. In 1865 another tramway line was started, and before long several extensions were made, the original promoters founding a company for the purpose. Another company appeared later and built lines mainly in the suburbs. Steam trams were introduced in 1883, and electric traction, which followed in 1897, spread to all lines in 1922. Both accumulators and the conduit system were tried, but the overhead wire system superseded them; the bow collector also replaced the trolley wheel. The route mileage is now 288 km. (179 miles).

The war seriously affected the fortunes of the tramways, and the competition of other vehicles, especially bicycles, has since increased considerably. Improved tramcars and better services, however, have helped to retain public patronage. The centre of the city is not suitable for tramways, which accounts for the short length of most of the radial routes—about 6·8 km. (4·22 miles)—and the small number of through connections. There are, however, some ring (or circular) routes which compensate for this to some extent. The nearness of the hills, some coming within the city boundary, results in about 60 per cent. of the routes having gradients up to 6·7 per cent. Nevertheless, a good average speed is maintained, up to 15 km.p.h. (9·32 m.p.h.) on Sundays. Workmen's traffic is carried mostly by the circular services, and the professional and business traffic on the radial lines. Short zone fares have proved very successful. In 1928 the record number of passengers was reached —650,300,000. The tramlines extend about 16 km. (10

miles) in all beyond the city limits and on weekdays carry about 19 per cent. of the suburban traffic. Excursion traffic is heavy at certain seasons, especially to the bathing stations on the Danube, but is naturally subject to weather variations. A very heavy service has to be maintained on November 1 to the principal cemetery, and events at the Stadium call for special arrangements.

The City Railway has a length of 26·8 km. (16·65 miles); 7·2 km. (4·47 miles) are on viaduct and 6·7 km. (4·16 miles) in covered way or tunnel. It was constructed as a steam line to bring suburban trains into the city, but it does not serve the central part and the route is not very satisfactory for present-day purposes. Taken over and converted to electric traction by the city in 1925, it became more useful, and a higher average speed, 25·5 km.p.h. (15·84 m.p.h.), is now maintained. The stopping places are about 1,000 (1,094 yd.) apart. The line is worked in direct association with the tramways, with through fares, and the trains are composed of groups of up to 9 vehicles of tramcar pattern, with pneumatic multiple-unit control; at one point trains can leave the railway and run over street routes. Automatic signals, with train stops at selected places, are provided, and there are power frames where point operation is required. There is also some automatic point setting in conjunction with train describers. The line no longer has any association with the Austrian Federal Railways.

Motorbuses are used mainly in the centre of the city where there are no trams, replacing the old horse omnibuses. Route mileage totals 105 km. (65¼ miles); the average speed on weekdays is 15·3 km.p.h. (9½ m.p.h.) and reaches 20 to 22 km.p.h. (12·43 to 13·67 m.p.h.) on Sunday extension routes. Owing to the difficulties confronting the tramways in the contemplated change to the right-hand street traffic rule, there are some who advocate their replacement by buses, but this is not likely in the near future as the cost of working buses in Vienna is much higher than trams. Bus traffic has increased 43 per cent. since 1931. The highest-priced ticket allows of changing to the trams on the *Stadtbahn*. Most of the buses have centre entrances, but some now have front entrances and one-man operation. The latter are used chiefly on the 6-km. (3¾-miles) scenic route to the Kahlenberg, 483 m. (1,585 ft.) above sea level, where the maximum gradient of 6·9 per cent. is satisfactorily surmounted by their diesel engines.

Overseas Notes

Road and Rail Excursions, H.E.H. the Nizam's State Railways

During the past year, the Nizam's State Railway organised several rail-bus excursions in Hyderabad State, which proved extremely popular. The excursions were run to various places of historical and archæological interest, such as Ajanta, Ellora, Warangal and Nizamsagar. Over 2,200 passengers joined these excursions, some coming from distant places like Delhi, Bombay, Madras and Trichinopoly. The Archæological Department of H.E.H. the Nizam's Government provided guides to show round the excursionists. In the earlier excursions, the fares included only transport charges by rail and bus, though special arrangements were made for food which was paid for separately. Later, the fares were inclusive of food charges and also, at certain places such as Ajanta, shelter. Press representatives were invited to accompany the excursions. On occasions, lucky tickets were drawn on behalf of the tourists, the recipients getting the benefit of a free lift.

In the city area of Hyderabad, " all-bus " excursions were provided for public and British military parties separately. The efforts of the railway to make these trips pleasant by providing light refreshments, music and recreations were greatly appreciated. In addition to these sight-seeing excursions, the railway proposes to run during the next cold weather season, educational excursions to factories, farms, workshops and museums for the benefit of the student community.

Street Accidents in Germany

There were 267,150 street traffic accidents in Germany in 1936, by which 8,381 persons were killed and 173,747 injured. The worst period was July, August, and September, attributable to seasonal traffic conditions. In all 509,415 persons or vehicles were involved. In the quarter mentioned there were three times as many motor-cycles concerned as in the first quarter of the year; almost every third case in the year involved a motorcar. Pedestrians concerned totalled 41,025. An analysis of cases shows that, as regards motor vehicle collisions, the chief cause was failure to give way to the prior right of another driver, while cutting in and careless overtaking contributed to large numbers of accidents. Excessive speed also played an important part. Notwithstanding severe penalties for driving under the influence of drink, there were 8,938 accidents due to this cause. Wet and slippery road surfaces and fog led to 17,512. There were 632 cases of drivers falling asleep, while non-classified causes where drivers were responsible came to 159,783. Pedestrians were responsible in 21,785 cases; motor-cyclists in 28,610; and drivers of other vehicles in 6,205. In 44,415 instances no cause could be clearly ascribed. Complete comparisons in this important matter will not be possible until the now standardised method of classsifying results has been long enough in operation, but it is known that the police are giving serious attention to certain aspects of the situation.

Publications Received

The Importance of Bituminous Emulsions.—We have received from the Road Emulsion and Cold Bituminous Roads Association Limited a brochure bearing the above title which that association has compiled, embodying the translation of an article by Dr. A. Stellwaag, Chairman of the German Road Emulsion Association. The original article was issued in January of the present year in the German monthly publication *Bitumen* and, although brief, should prove of considerable interest to those concerned with road construction. Mr. Arthur Sweet, the Secretary of the Road Emulsion and Cold Bituminous Roads Association Limited, informs us that copies may be obtained free upon application to him at 11 and 12, Bow Churchyard, London, E.C.4.

Highway Administration and Finance in Fifteen Countries. Paris, The International Chamber of Commerce, 38, Cours Albert 1er, Paris (8e): 9¾ in. × 6¼ in. 174 pp. Price fr. 20.—This publication, which is Brochure No. 94 of the I.C.C., has been issued in English, French, and German. It is a survey of the different methods of highway finance employed in various countries at the present time, based on reports prepared by M. Louis Delanney (Head of the Transport Department of the I.C.C.), for Argentina, Australia, France, French Equatorial Africa, Germany, Great Britain, Italy, Netherlands, Netherlands East Indies, Poland, Portugal, and Turkey. A special report on China has been prepared by Mr. T. K. Chao, and one on the United States of America by Mr. Thomas H. MacDonald. A chapter is devoted to each country, and, in order to make comparison easy, the reports are written on the basis of a uniform plan. The brochure is a useful compendium for all concerned with problems of modern highway finance and construction, and gives a good bird's-eye view of the progress that is being made in various parts of the world, as the countries chosen for report are from all of the five continents and were selected as being particularly characteristic of present-day methods.

London Transport trolleybus and tram routes; all the latter are now authorised for conversion

Trolleybus Progress in London

Increasing trolleybus mileage as tram routes have been converted has necessitated the development of maintenance methods specially adapted to the new conditions

ONE of the major tasks with which the London Passenger Transport Board was faced on its formation four years ago was the welding into a unified system of a large number of separate tramway undertakings with a total route mileage of 327. The lines within the County of London were almost entirely the property of the London County Council, but outside the county boundary there were various systems owned and operated by local authorities, in addition to tramway and light railway undertakings worked by tramway associates of the old Underground group. The London Passenger Transport Act of 1933 authorised the abandonment of the tramways in whole or in part, but did not give the board specific authority to substitute trolleybuses, and therefore successive applications have been made to Parliament for powers to introduce trolleybus services in lieu of trams over various sections of the combined system, mainly on routes outside the County of London. The London Transport Act of 1937 has now empowered the board to convert the whole of its tramways, and present plans envisage the disappearance of the tramcar from London about five years hence.

The first trolleybuses to run in regular service in the London area were those introduced in 1931 by the London United Tramways Limited in substitution for certain of its tramways in the neighbourhoods of Wimbledon, Hampton, and Twickenham. These routes, a total of 17 route miles worked with 61 trolleybuses, were taken over by the London Passenger Transport Board on its formation and formed the nucleus of the present system. Conversion of further sections of tramway was speedily taken in hand and resulted in the opening of services from Shepherds Bush and Hammersmith on October 27, 1935; subsequently all the remaining sections of the L.U.T. system have been dealt with similarly. The first municipal systems to be converted were those of Erith, Bexley, and Dartford, where the changeover took place on two dates in November, 1935.

At the close of the financial year ended June 30, 1936, there were 61 miles of route being worked with trolleybuses and 105 miles in process of conversion. Since that date many further sections have been opened to public traffic, and the culminating point so far was reached on Sunday, September 12, which witnessed the largest changeover from trams to trolleybuses undertaken by London Transport in one day. The areas affected were west and north-east London. In the west the result has been the final abandonment of all trams westward of Finchley and Wandsworth, and incidentally, the first conversion of any lengthy section of former L.C.C. line (the Harlesden-Hammersmith-Wandsworth route). In north-east London trolleybuses have now replaced the various municipal tram routes in East Ham, West Ham, Leyton, and Walthamstow, other than the trunk routes from Aldgate to Barking and Ilford, and from Central London to Walthamstow. The total trolleybus route mileage in London has thus now been brought up to 147, and before the end of the present calendar year the figure will be 170 miles.

Experimental front-exit trolleybus

It will be noticed that this figure of 170 is almost exactly half of the total tram mileage when the process of conversion began, and it is interesting to learn that the fleet of trolleybuses expected to be at work by the end of the year will number about 720, whereas the complete displacement of tramcars is expected to require 2,500 trolleybuses. These figures demonstrate very clearly that in the main it is the routes of less dense traffic which so far have been turned over to trolleybuses, for half the total mileage involves considerably less than one-third of the estimated total vehicles. The total cost involved in the replacement of London tramways has been placed at approximately £10,000,000.

In our Road Transport Section of December 20, 1935, we published some details of the working arrangements and the equipment installed by London Transport in connection with the groups of suburban services opened about that time, but the experiences of the past two years have resulted in certain improvements in methods, and have enabled a maintenance routine to be evolved. In connection with maintenance it may be noticed that in its last

report the board made some interesting and cautious remarks. By reason of the smaller size of the trolleybuses as compared with many of the trams displaced (and to some extent in order to give closer interval services) the car mileage worked by trolleybuses on converted routes has shown an increase over that formerly worked by the trams of about 24 per cent. Despite this mileage increase, receipts per car mile have increased by 5 per cent., and in special cases like the route from Walthamstow to Tottenham considerably greater increases have been shown, mainly because the tram service terminated in a dead end some distance from the main road at Tottenham, whereas the trolleybuses have bridged the gap and also proceed some distance further, to the Manor House, where contact and in the interests of safety it is considered desirable to avoid backing the vehicles in the depot.

Two systems are in operation, both providing for the progressive system of cleaning. In some depots an unroofed concreted turning area is provided at the end remote from the entrance, and the vehicles, after being washed and cleaned, are driven through the depot and turned into their allotted parking places facing forward ready for service. The other system provides for a traverser incorporating a turntable to serve the whole width of the depot. Both the traversing and turning motions are electrically driven and controlled from one handle, as it is neither necessary nor desirable to operate the two motions simultaneously. Experience indicates that the traverser method

Turntable and traverser by S. H. Heywood & Co. Ltd., in use at the Hounslow depot, which enable the vehicle to be manœuvred into any position within the minimum space

is made with the tube railway. Although the results of trolleybus working are sufficiently satisfactory to justify the board in arriving at a general decision to complete the substitution of trams by trolleybuses, the cost of trolleybus operation is not yet finally ascertained, and the policy of London Transport has been adopted after bearing in mind various indirect advantages such as the improvement in the fluidity of traffic.

Principles of Depot Maintenance

The trolleybus depots at present in operation on the board's system are, with one exception, reconstructed tram depots, but although Bexley is the only completely new building, the reconstruction of the old depots has been so thorough that the facilities provided in the way of buildings, accommodation, and plant, are generally similar. Both design and operation of the depots are influenced by the necessity for trolley wires, and the desirability of avoiding, as far as possible, complication in the overhead equipment. Changing trolleys from one pair of wires to another, when manœuvring into position for parking and running into service, is reduced to the minimum is more convenient in operation, as the open turning area tends to complicate the layout of trolley wires and necessitates considerable changing of trolley booms from one set of wires to another. There is also the drawback, especially in winter, that the necessity for having doors open at both ends of the depot causes uncomfortable working conditions.

As far as possible night work in the depots is kept to a minimum. Fortunately, in most of the trolleybus areas the service requirements call for a proportion of part day service vehicles, enabling the dock inspections and overhauls to be scheduled during the daytime when working conditions and supervision are most efficient. Maintenance is divided into daily or nightly cleaning and inspection of certain details, intermediate docks and main docks.

Nightly Cleaning and Inspection

As a trolleybus runs in from service the procedure is as follows: Immediately on entering the depot a test for electrical leakage is carried out. A plug on the end of a long flexible lead contained on a spring roller-drum is inserted into a socket provided at the rear of the vehicle.

It will be noticed that the foreman's office gives a view of almost the whole of the depot

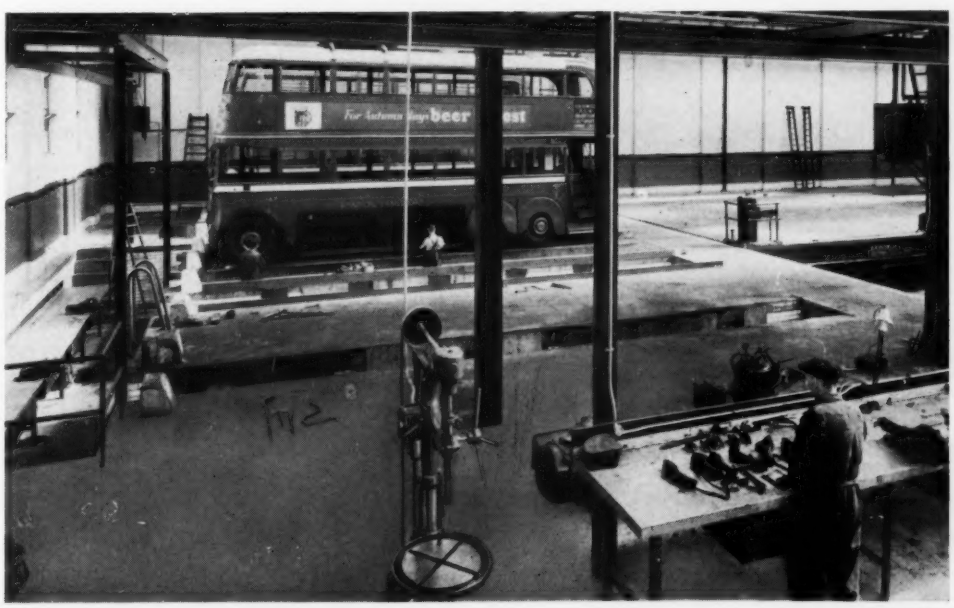
This connects the chassis through a fixed testing milliammeter to earth. The vehicle is then moved forward on its own power so as to make all the wiring alive, and should there be any leakage the amount is shown on the testing instrument; all readings, whether zero or otherwise, are recorded on a sheet. No trolleybus is passed as fit for service if a leakage of more than 0·002 amp. is shown. The importance of this precaution on a rubber-tyred vehicle will be appreciated; it is very rare for any trolleybus to fail in this test, which takes only about twenty seconds to perform.

At the end of the test the vehicle is in position for washing by spray-gun, one man operating on each side of the vehicle. Attached to the gun by a clip is a brush fixed on an aluminium tube 5 ft. long, enabling spraying and brushing to be carried out as one operation. The process is completed in two minutes, and the vehicle is then moved forward over an inspection pit. At this point there are gantries giving access to each side of the upper portion of the vehicle. The gantries are equipped with a hot and cold water supply, waste pipes and vacuum nozzles, to which flexible hoses are attached. Provision is also made for a trolley-head inspection point, and augmented lighting.

The following work proceeds simultaneously: general undergear inspection by one man in the pit, which is floodlighted so as to illuminate thoroughly the trolleybus mechanism; one man on a gantry, vacuum-cleaning the inside of the top deck, the flexible hose being passed through one of the vehicle windows; and one man at ground level, vacuum-cleaning the inside of the lower deck. Meanwhile, a man on a gantry on each side polishes the exterior of the top deck windows. The combined operation is completed by the five men in four minutes. A signalling arrangement is fitted to avoid risk of accident due to the vehicle being moved whilst men are working on it. A push button is fitted at every working point on the gantry, at ground level and in the pit. As a man completes his job and is all clear, he operates his push button. When all buttons have been operated (not necessarily simultaneously) an illuminated "all clear" signal is given to the driver.

These same gantries are used in the day time for a special soap wash of the exterior, carried out every three weeks, which is particularly valuable in maintaining the high standard of appearance required by the board.

From the gantries the trolleybus passes on to the traverser or turning area, and is driven to its allotted



General view of the pits, with a trolleybus undergoing dock overhaul. A fitter can be seen standing on the sunken pathway in the pit, which is arranged at a height to afford easy access to the contactor gear

position ready for service. The vacuum-plant consists of an electrically driven Sturtevant exhauster housed in one of the depot buildings, with pipes running overhead to the gantries. Adjacent to the vacuum-plant is an incinerator into which the dust and tickets delivered into the reservoir are transferred through a chute, thereby considerably reducing the cartage of rubbish from depots.

Every trolleybus carries a report sheet, which is renewed daily. Every driver who has operated the vehicle during the day signs to certify that the vehicle is in good condition, but should there be any defect or complaint he enters particulars. These sheets are collected nightly; any minor defects are seen to, and the sheet signed by the man carrying out the repairs. Should any major defect be reported the vehicle is put by for repairs to be carried out by day staff.

Day Work

The day maintenance work constitutes the backbone of the system for maintaining the fleet in an efficient electrical and mechanical condition, and is based on the principle that constant and thorough inspection and preventive repair are preferable to interference with service as a result of defects occurring on the road. The main inspections are divided into intermediate docking, carried out fortnightly on every trolleybus, and major docking, once every three months. The intermediate dock overhaul is worked to a strict schedule whereby all parts are lubricated, the brakes examined and adjusted, batteries topped up, all control-gear examined, and such minor repairs and adjustments made as may be found necessary. Seats are vacuum cleaned, trolleys examined and tested for correct tension, and all details of bodywork and minor accessories tested and attended to. This work usually takes about two hours a vehicle, a team of four men being employed.

The major docking includes the same work as the intermediate, but, in addition, wheels are removed and any necessary brake linings renewed. Certain items are partly dismantled in order to allow of examination and adjustment of details not accessible at intermediate docking. Units which are scheduled for routine changing are dealt with during the major docking. Special electrical tests are taken of insulation and resistance values of all circuits. A special inspection is also made of all piping and cables to ensure that there has been no abrasion due to movement in service. The major dock occupies eight hours with a team of four men.

Every vehicle is sent to the parent depot periodically for painting and overhaul. A chart for every trolleybus is kept in the depot foreman's office, showing the days in service, the dates when intermediate and major docks are due, and dates for shop painting. When the work has been completed the information is recorded on a card, one of which is allotted to every vehicle. On this card also are entered particulars such as date of units changed, major repairs carried out, dates of transfer to depots, licensing dates and other information that may be useful as a record of the vehicle's history. When the vehicle is transferred to another depot this card goes with it so that the receiving foreman can carry on the allotted schedule of overhauls without any break and can follow up the vehicle's record.

The system is being adopted of deciding an economical life for every unit, bearing in mind freedom from running trouble and cost of overhaul. All units will be changed at the specified intervals during dock overhauls and replaced with an overhauled unit, the unit removed being sent to Central Repair Shops for renovation.

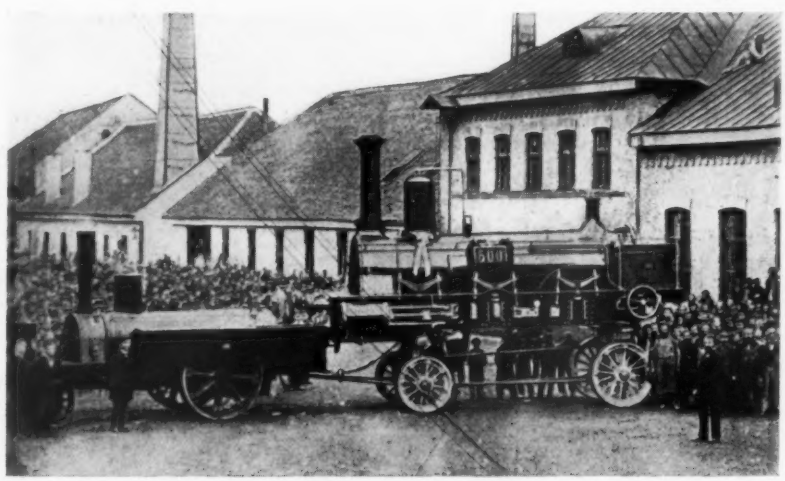
For easy access to the contactor gear, compressor and other items which are supported on the side of the chassis, one or more pits are provided with a sunken pathway at each side, to enable the men to work without stooping. Facilities are provided for easy and rapid lubrication of greasing nipples by air-operated greasers, and portable hand pump tanks are used for filling differentials.

In some of the later depots pipe lines are laid in the pits to deliver supplies of the various oils and greases required. These are fed under air pressure supplied from a central electrically driven compressor. Compressed air is similarly available and is used for blowing out dust from electrical apparatus and insulators. This arrangement not only speeds up the work but ensures absolute cleanliness without any risk of dirt getting in the lubrication.

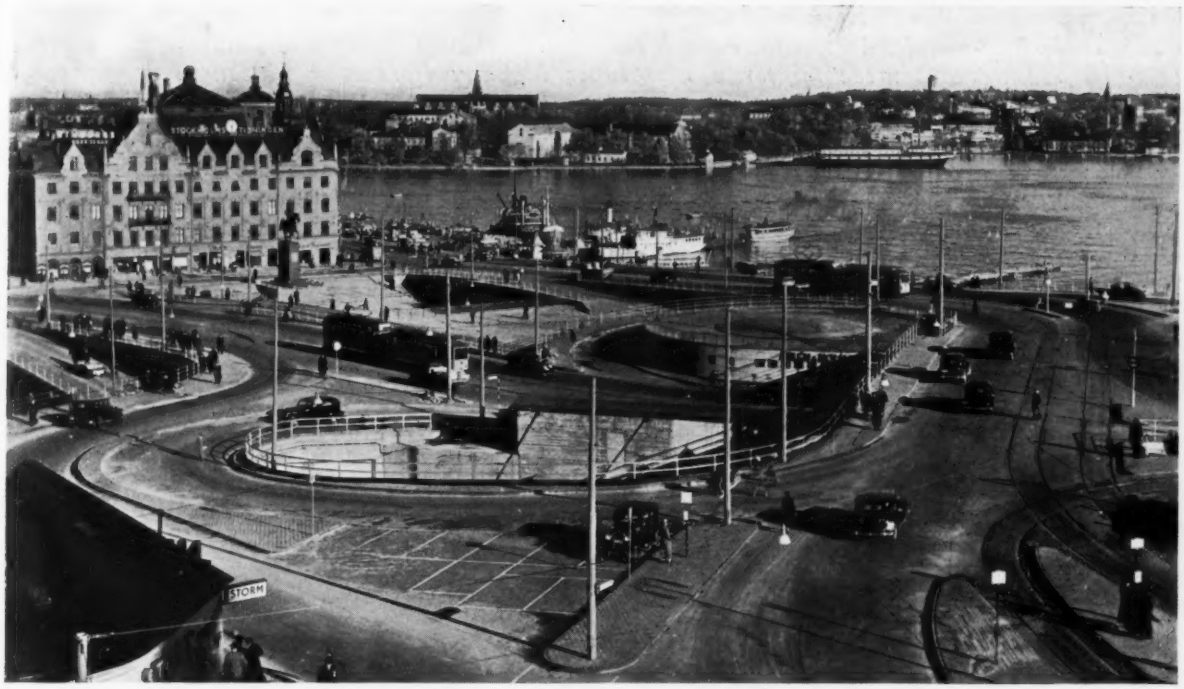
Heating and ventilation are provided by means of electrically driven fans, which, when heating is required, pass the air over hot water pipes fed from a coke fired boiler. In warm weather the main boiler is shut down, the hot water required for soap-washing vehicles and domestic purposes being supplied from a subsidiary boiler. An interesting feature in the depot is the foreman's office, which is built from six to eight feet above ground level, giving a good supervisory view of practically the whole depot.

Road Transport of a Locomotive in the 'Sixties

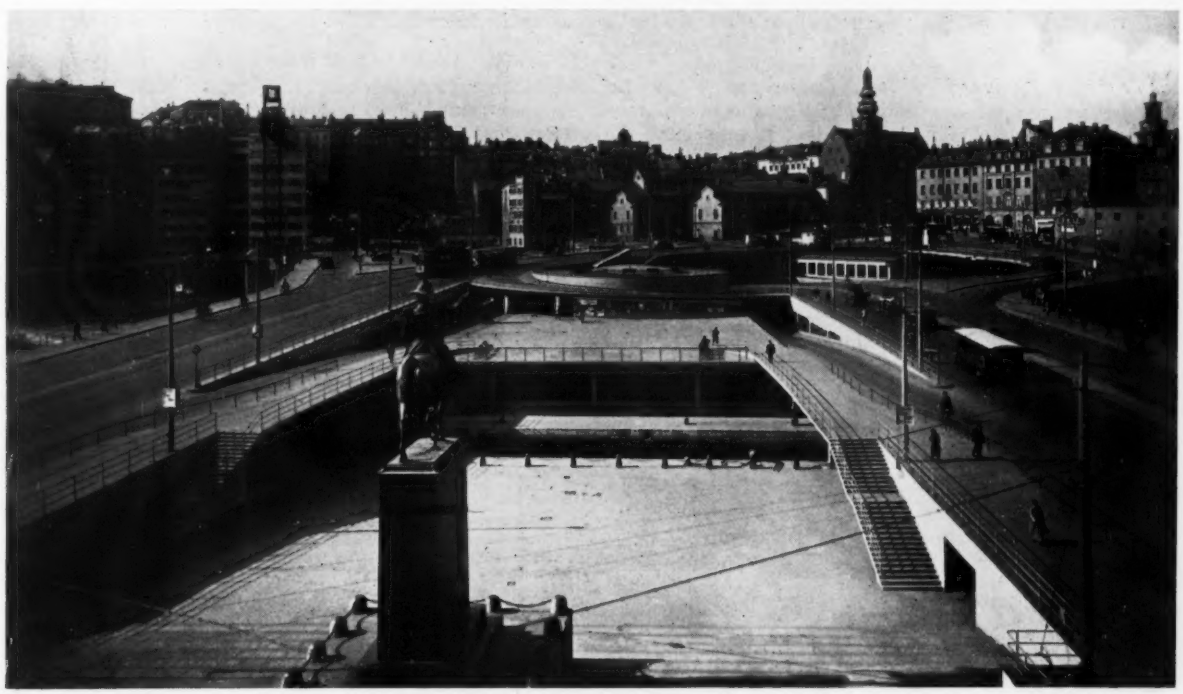
A contemporary photograph of an early locomotive for the Bavarian State Railways being towed by a traction engine from J. A. Maffei's works at Hirschau, Munich. The trailer supports the locomotive fore and aft, and it will be noticed that the wheels and connecting rods have not yet been fitted



The Flying Road Junctions at Slussen, Stockholm



View towards Saltsjön showing, in the foreground, the roads descending from Södermalm to Staden, and the approach to Katarina Vägen burrowing underneath towards the right

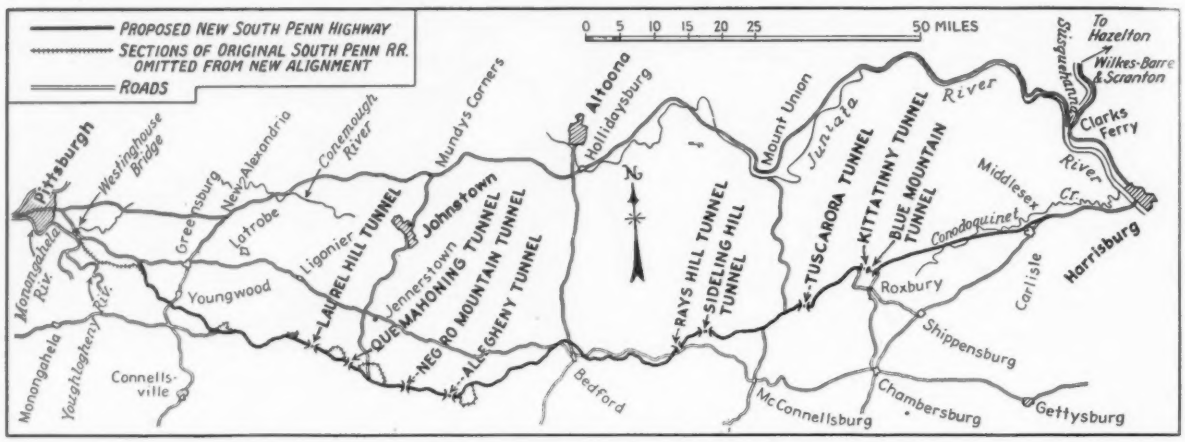


View taken in the opposite direction to that of the top picture. The statue in the foreground may be recognised in the front of the large building on the left of the top picture. The station of the electric railway to Saltsjöbaden is below the lift outside the building on the left. Directly behind the circular arcade in the middle is the station for the underground tramway beneath Södermalm. Before this elaborate system of flying road and tramway junctions was constructed, this busy traffic centre in Stockholm was the cause of frequent serious traffic blocks now completely unknown

Derelict Railway Formation for New U.S.A. Highway

The partly-completed "South Penn" Railroad earthwork, bridges and tunnels are to be widened and made up for a new super highway from near Pittsburgh to near Harrisburg, through the Allegheny Mountains in Pennsylvania

AMONG the mountains of southern Pennsylvania are the derelict earthworks, bridges, and tunnels of the "South Penn" railroad, upon which Mr. W. H. Vanderbilt spent some $10,000,000 about 50 years ago; he used it to drive Morgan (Pennsylvania Railroad) interests from his railway preserves along the Hudson River, but it was never completed. Now, according to our American contemporary *Engineering News Record*—to whom we are indebted for the following information and illustrations—a further $60,000,000 are to be spent in converting the formation for use as an express highway.



Sketch map showing course of proposed new highway along derelict "South Penn" Railroad formation

Beginning about 100 years ago, the State of Pennsylvania carried out the first of a series of surveys from Chambersburg in the Cumberland Valley to Pittsburgh, 125 miles to the west, but these one and all proved that the mountainous terrain rendered any such railway prohibitively costly at that time, even with the aid of State subsidies. In 1854, however, a private company obtained a charter, and surveyed a line successively known as the Duncannon, Landisburg and Broad Top, Sherman's Valley and Broad Top, Pennsylvania and Pacific, Harrisburg and Western, and finally, in 1863, Southern Pennsylvania Railroad. During the succeeding 20 years the charter was kept alive, but the scheme was still dormant, until it became a pawn in the railway game of the early eighties. Then 5,000 miles of alternative alignments were surveyed as a counterblast to the purchase by the Morgan-controlled Pennsylvania Railroad of the West Shore line, and finally a 208-mile route was selected.

Construction then began, and by November, 1885, nearly 4½ miles of tunnels had been driven, and 5,000,000 cu. yd. of earthwork had been completed, before a truce was

Remains of 50-year old embankment

The old Blue Mountain tunnel

signed leaving Vanderbilt in undisputed possession of the Hudson River area, and construction work was stopped.

The New Highway

In January, 1936, a survey was initiated by the State Highway Department in co-operation with the Works Progress Administration, and from 40 to 70 men have been employed upon it since then, to examine the possibilities of utilising the old formation in the construction of a new highway; in spite of floods, the preliminary survey is now practically complete. By modifying the original gradients and curves, a saving in length has been effected as compared with the railway, and a more detailed survey is now in hand. The conversion scheme has been shown by the preliminary surveys to be so promising that plans for beginning construction work are being made.

On May 21 last, the Governor of Pennsylvania signed an Act creating the Pennsylvania Turnpike Commission, and authorising the issue of revenue bonds to raise the necessary funds for the construction and initial operation of a super highway on the route that is being located. It begins 20 miles east of Pittsburgh, on the Lincoln Highway, and ends 15 miles west of Harrisburg, a distance of 164 miles through the Alleghenies and across the Cumberland Valley. There are two 22-ft. concrete roadways separated by a 6-ft. planted strip, and, thanks to the original railway grading, it has been possible to secure a ruling gradient of 1 in 33—as compared with long lengths of 1 in 12½ and 1 in 11 on the older high roads through these mountains—and a minimum curvature of 6 deg. (14 ch.). Three-quarters of the route is straight, and one continuous length of straight is 40 miles long.

Advantages of the New Road

The railway engineers located their line as far as possible on the southern and western slopes to accelerate the melting of snow and ice, so that the new roadway will be as safe as possible in this respect. The nine tunnels that, more than half finished, afford protection from the steepest mountain slopes. As compared with an aggregate climb through 13,880 ft. on the Lincoln Highway, the new road will necessitate the negotiation of only 3,940 vertical feet, and the cost of lorry working on the 1 in 33 grades will be only half as great as on the 1 in 11 grades of the other highways, while much greater safety and speed may be looked for on the new road. All towns and cities are by-passed, and bridges are provided at all railway and road crossings; to secure all-weather use, the road surface is being kept above the record high flood levels of 1936.

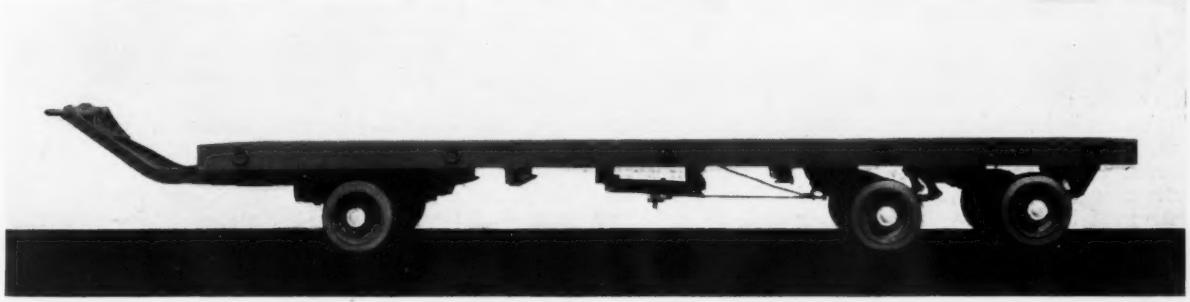
Extent of the Work to be Done

Of the railway tunnelling, 15,000 ft. are of sufficiently large section for the two-track roadway, and the remaining 8,000 ft. have to be enlarged; in addition 14,000 ft. of new tunnel have to be driven. To provide the additional width for the dual roadway, and the formation of the sections re-located, an extra quantity of 9,000,000 cu. yd. of earthwork is required. Altogether about 19,000 men will be employed on the road for a year, and, in addition, 32,000 men will be required in quarries, mills, and elsewhere to provide the 2,000,000 tons of stone and sand, 50,000 tons of steel, and 400,000 tons of cement necessary for its construction.

Financial Considerations

Until the final surveys and estimates are completed, the total cost cannot be stated accurately, but preliminary estimates place it at approximately $50 to 60 million, or about $330,000 a mile. As such a sum could not be borne by current revenues, and the liquidation of a long-term bond issue would necessitate increased taxation, and place upon all motorists a burden not in proportion to the benefits afforded in different parts of the State, the Act provides that the necessary revenue shall be derived from tolls. The saving in cost of lorry working, and in time—5 to 6 hr. on the run between Pittsburgh and Philadelphia—will warrant the payment of a toll, and increased speed and safety in the case of cars will also justify such a payment. In the report on which the Act was based, the minimum daily number of vehicles likely to use the new road was estimated at 5,000, a number that would make it possible to amortise the cost of construction with a reasonable toll charge.

Large Capacity Trailer for South Africa

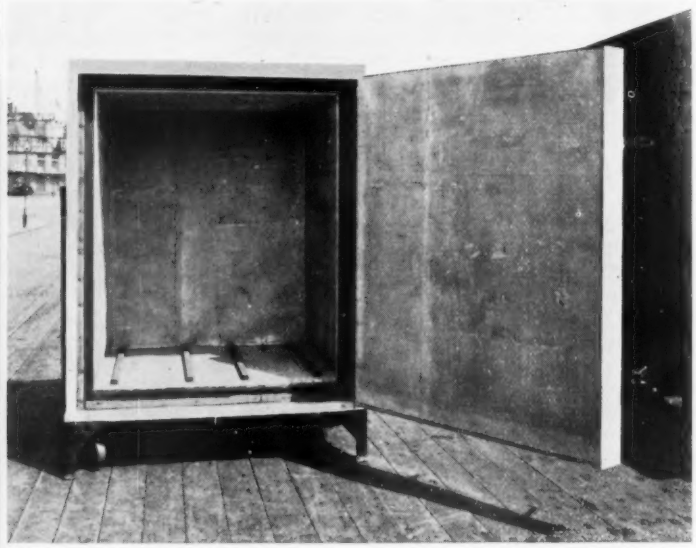


The 25-ton trailer illustrated has been built for the South African Railways & Harbours Board by Carrimore Six Wheelers Limited, North Finchley, London, N.12, to the order of the Griffin Engineering Co. Ltd. of Johannesburg. A feature of the design is the specially low construction of the platform, which has a height of only 2 ft. 6 in. when laden. Its area is 1,650 sq. ft. The trailer—an eight-wheeler—has a carrying capacity of 25 tons, and is intended for dock work. The four wheels at the front (right of illustration) are mounted on two rocking axles, one behind the other. At the rear are four wheels in tandem, each pair on its own axle. Solid tyres, 20 in. × 6 in., are fitted throughout. Brake drums 16 in. dia. × 3 in. wide operate on the rear wheels, and are actuated either from the tractor or from a screw handle on the off side of the trailer. The trailer will be used mainly for the transport of machinery and similar goods, and its operation will be confined to docks, warehouses, and similar premises affording a smooth surface.

Insulated Containers in Sweden

A new type of container for fish traffic designed for easy transport on the standard platform truck

THE problem of providing a type of insulated container that can be lifted without a crane has been solved on the Swedish State Railways by the introduction of one that is 5 ft. 10 in. in height, 3 ft. 11½ in. in width and 4 ft. 8 in. long. It is intended primarily for fish traffic and when loaded with this commodity weighs about 22 cwt., of which 6 cwt. is tare. The size is dictated to some extent by that of the platform trucks for moving the container about, either by hand power or a small tractor.



Two views of one of the new fish-traffic containers for the Swedish State Railways, one (left) showing it resting on the wheels for platform transport, and in the other it is resting on the legs ready for loading

The container frame consists of 2-in. × 2-in. × $\frac{13}{16}$-in. angles, to which a $\frac{5}{16}$-in. plywood outer casing is fixed with copper rivets. The casing is stiffened by 2-in. wooden ribs on the inside and is externally strengthened with strip iron. A similar inner casing is also provided, but the wooden ribs outside it are fitted at right angles to the outer casing ribs. The inside is lined with zinc sheet made waterproof by soldering at the corners and joints. The space between outer and inner casings is filled in with a new insulating material known as Isoflex. This is composed of a cellulose base mixed with aluminium powder and pressed into corrugated sheets. By laying these one on top of the other, insulation is obtained by confining the air to small pockets so that it cannot move, the aluminium in the Isoflex serving to prevent any escape of heat by radiation. The ribs between the casings prevent the Isoflex from being crushed.

A similar construction is used in the door of the container, but to reduce conductivity oak is used in its frame instead of steel. In all the joints, and particularly between the wood and the steel frame, a coat of Flintcote paint is given which provides complete protection against water. A coating of shellac is applied before the container is painted.

For ease of handling the container is provided with small wheels fitted to an auxiliary frame fixed under the body which is controlled by a lever at the side; by lowering this lever the frame is forced down and the wheels are brought into contact with the ground. When the lever is raised, the frame rises and the container rests on short legs which are formed by the extensions of the vertical members of the angle iron frame.

DIESEL LORRIES FOR KENYA. — To secure greater economy in working by using high-capacity road motor units as replacements for three- and four-ton lorries, three 15-ton diesel-engined Albion lorries and trailers were ordered from England by the Kenya & Uganda Railways and Harbours Administration towards the end of 1936 and were delivered this summer. Each unit consists of an 8½-ton overtype 6-wheeled Albion lorry, with a 6 LW Gardner diesel engine, hauling a 6½-ton 4-wheeled Brockhouse trailer fitted with Servo assisted brakes on all six wheels of the lorry and rear wheels of the trailer. Each lorry is also fitted with double-drive rear axles. Only the chassis of the lorries (including driving cab) and trailers were supplied from England, as the bodies of both were constructed in the railway workshops at Nairobi. The units are now in service on the Masindi—Butiaba route.

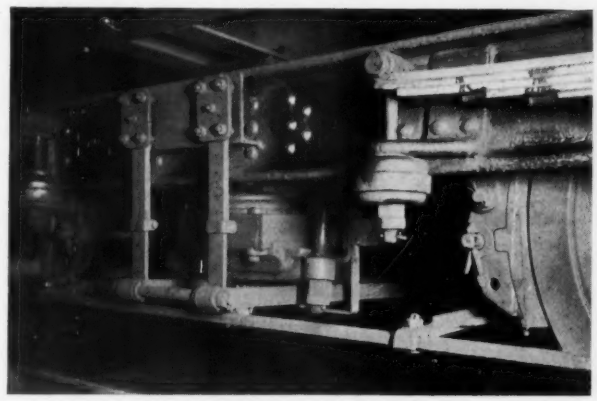
BOGIE CONTROL GEAR FOR HIGH-SPEED TRAINS

Special design on the Coronation Scot, L.M.S.R.

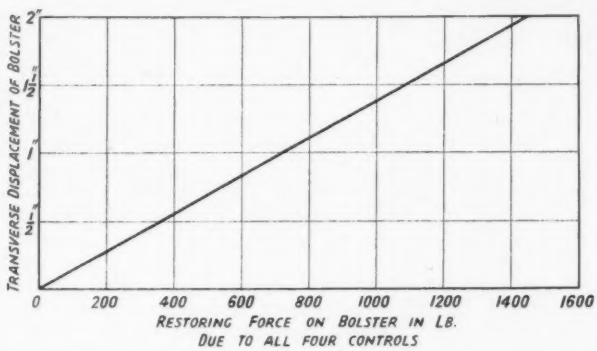
BY the courtesy of Mr. W. A. Stanier, Chief Mechanical Engineer of the London Midland & Scottish Railway, we are enabled to reproduce herewith drawings and photograph of the bogie bolster control gear fitted to the front and rear vehicles of the Coronation Scot trains. This has been developed with the object of reducing the rolling side movement sometimes experienced on the end vehicles of trains running for prolonged periods at high speeds. The arrangement consists of two flat three-plate leaf springs on each side of the bogie, fixed to the bogie solebar above the bolster. The springs are designed to operate in either direction, and the eye ends are connected through links to the bolster spring plank or swing beam.

As normally situated, there is no initial stress in the springs, but any transverse movement of the bolster and spring plank is restricted by all four springs simultaneously. The friction between the spring plates helps to damp any continuous oscillation from side to side on the bogie suspension bolts. The natural period of this spring system is widely different from that of the coach on its swing link suspension, so that synchronous motion is not set up. We also reproduce a graph showing the total restoring force on the bogie bolster due to the springs for any given transverse displacement.

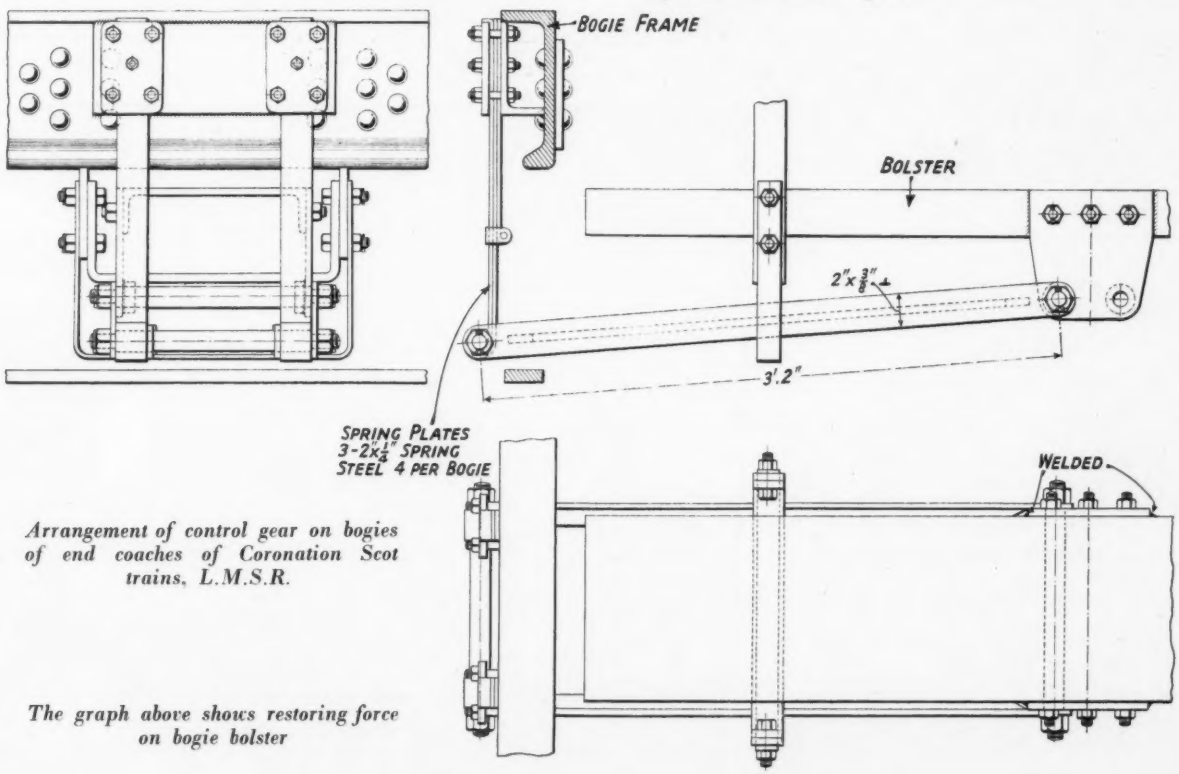
The Coronation Scot trains, including the locomotive, have achieved a high reputation for steady running at very high speeds, and this, so far as the coaches are concerned, is doubtless in a measure due to the improved type of bogie bolster control gear.



Bogie bolster control



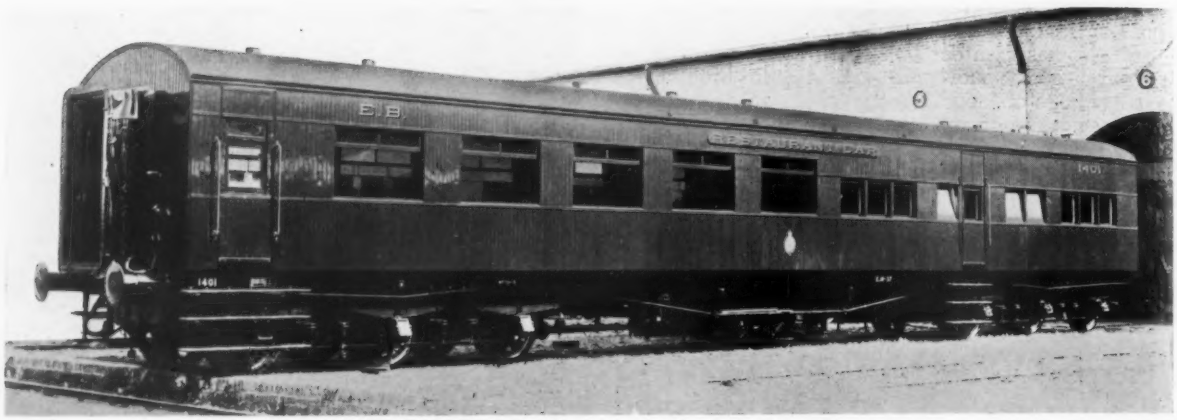
The graph above shows restoring force on bogie bolster



Arrangement of control gear on bogies of end coaches of Coronation Scot trains, L.M.S.R.

SOME NEW IDEAS IN TROPICAL RESTAURANT CAR DESIGN

Embodied in the most recent type of car on the Eastern Bengal Railway



A NEW type of 12-wheel restaurant car was recently placed in service on the Eastern Bengal Railway, the principal features of which are its essential efficiency and simplicity, coupled with an artistic colour scheme; the general effect may be seen from the illustrations. The bogie, underframe and external details are in accordance with standard Indian practice, except that windows with fixed lower lights set at an outward-sloping angle are provided instead of the usual triple opening types with glass, louvres, and wire gauze leaves. The fixed window, it is claimed, has special advantages in a dining saloon, even in India. The old type is rarely opened and the new effectively excludes dust and dirt, and the outward slope secures better drainage externally and obviates the possibility of the window acting as a looking glass, which is at times annoying. These fixed windows are of Calorex glass, and ventilation is secured by the use of smaller upper panes of frosted glass in frames that open upwards. The use of Calorex glass reduces the admission of heat, making possible the elimination of louvres, but blinds are provided to exclude the sun.

Colour Scheme

The walls and roof of the interior are lined in Rexine, dark green below the waist rail, medium green from waist to ceiling, and pale green on the roof. The chairs were chosen to tone with the Rexine, and are cane bottomed—the only reasonably cool pattern in the intense moist heat of Bengal. The design of the chairs and table legs is almost entirely straight line, on modern principles. The undersides of the glass-top tables are also cellulose painted to a stippled effect to match the rest of the colour scheme.

Lighting is confined to a semi-direct central roof panel or channel, and the roof line is curved on each side to meet this. Ample fannage is provided, one fan over each table, and advantage is taken of the extra space at the waist rail obtained from the outward setting of the bottoms of the windows to accommodate the fan regulators and bells in a convenient position within easy reach of the passengers. Neat racks for hats and light articles are fixed over every window, and the complete absence of all other projections in the form of decoration makes for ease in keeping the whole saloon clean, and gives a generally cool appearance also. This essentially serviceable vehicle was built at the Kanchrapara shops of the E.B.R., to the designs of Mr. Leslie Flatt, Chief Mechanical Engineer, just before his transfer to the North Western Railway.

Interior view of new restaurant car

RAILWAY NEWS SECTION

PERSONAL

ISLE OF MAN AIR SERVICES

Mr. W. P. Bradbury, Assistant (Passenger) to the Chief Commercial Manager, L.M.S.R., will be Chairman of Isle of Man Air Services Limited, the company which, as reported last week, is to represent the amalgamation in the Isle of Man area of the interests of Railway Air Services Limited, Olley Air Services Limited, and the I.O.M. Steam Packet Company. Wing-Commander A. H. Measures (Superintendent, Railway Air Services Limited) has also been nominated to the board of the company by the L.M.S.R. Representatives of the Isle of Man Steam Packet Company on the board will be Sir Frederick Clucas and Mr. C. S. Edgar; Captain G. P. Olley and Mr. J. W. S. Comber retain their directorships. Mr. R. L. Carter has been appointed General Manager, with headquarters at Isle of Man airport. (See also page 533.)

Mr. George C. Dew has been appointed General Foreign Freight Agent, Canadian Pacific Railway, with headquarters at Montreal, to succeed the late Mr. J. G. McNab. Mr. Dew has had many years of service in the Foreign Freight Department of the Canadian Pacific Railway. Recently, however, he has been engaged in commercial pursuits outside the company.

Mr. E. F. L. Sturdee, General Passenger Agent, Canadian Pacific Railway, at Vancouver, has been promoted Assistant Passenger Traffic Manager, Eastern Lines. Mr. G. B. Burpee, Assistant General Passenger Agent at Montreal, will succeed Mr. Sturdee.

WATERLOO STATIONMASTER HONOURED

Mr. H. C. Greenfield, Stationmaster at Waterloo, Southern Railway, was presented with a silver cigarette case on September 18 by Prince Chichibu of Japan, as a mark of appreciation of his work in connection with the Prince's journeys to and from Southampton. Prince Chichibu made the presentation just before he left Waterloo by the *Empress of Britain* boat train. He is travelling back to Japan *via* Canada.

Mr. E. H. W. Cooke, Comptroller of Electrical Industries Limited, has been elected a Director of the Birmingham Small Arms Co. Ltd.

Mr. William James Kinlay Skillicorn has been appointed General Manager of the Rhodesia Railways as from April, 1938, to succeed Sir Henry Chapman. Mr. Skillicorn, whose appointment was recorded in our issue of April 2, served for six years with three English railways before joining the Natal Government Railways in 1903.

Photo [*Leon Levson*

Mr. W. J. K. Skillicorn

Appointed General Manager, Rhodesia Railways, with effect from April next year

Mr. Skillicorn remained for seven years with the Natal administration, spending three years on goods and harbour work, and later specialising in rates matters, becoming Chief Rates Officer in 1906. At the time of Union (1910) he was transferred to headquarters of the South African Railways at Johannesburg, and in 1913 he was advanced to Principal Clerk (Rates); promotion to Assistant Superintendent followed in 1919. In the next year he was appointed Rates Assistant to the General Manager, whereafter he organised and introduced the grain elevator system in South Africa, having previously studied the subject in Canada and the United States of America. After ranking as Controller of Grain Traffic, Mr. Skillicorn became Divisional Superintendent at Kimberley in January, 1925, and later was in charge of the railways and harbours in South West Africa. Promotion to System Manager, Eastern Transvaal, followed in 1929, and from 1930 he was, for four and a half years, System Manager of the Cape Western System. Mr. Skillicorn's appointment as Assistant General Manager (Commercial) took place in April, 1935, since when he has, for two periods aggregating nine months, acted as General Manager of the South African Railways. Mr. Skillicorn has been connected with many commissions and conferences. From 1906 until the time of Union he attended every rates and inter-colonial conference, and also attended the National Convention. He was a Member and Secretary of the Grain Elevator Commission in 1918; an Assessor-Member of the first Board of Trade and Industries; Chairman of the Departmental Tariff Inquiries Committee (1930); a member of the Cape Town Foreshore Inquiries Committee in 1931; Chairman of the Moulding Trade Inquiry in 1934; and Chairman of a committee appointed by the Minister in 1934 in connection with the export of fruit and maize from the Eastern Transvaal. Amongst other important work carried out by him may be counted the main revisions of South African railway tariffs over the period 1910-1922, and the collation of data and evidence for the Granet Commission, and the South West African Economic Commission in 1933. He has been Chairman of the Conciliation Board, and holds high office in the Institute of Transport and the St. John Ambulance Brigade. (See also editorial on page 505.)

The directors of the Gloucester Railway Carriage & Wagon Co. Ltd. have accepted with regret the resignation, as from October 15 next, of Mr. John H. Beach, their Secretary-Director, who retires on pension after 37 years' service.

Mr. Norman A. Hardie, General Manager (Sales) of the Associated Equipment Co. Ltd., has entered a London nursing home to undergo an operation. He hopes, however, to resume his duties by the middle of October. Mr. Hardie is also Chairman of the Commercial Vehicle

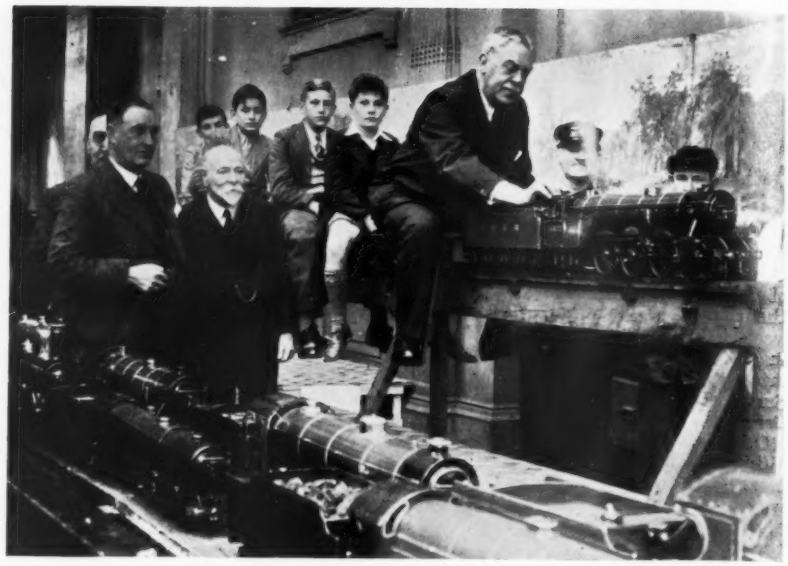
Committee, and Vice-Chairman of the Exhibition Committee, of the Society of Motor Manufacturers & Traders Limited.

Mr. C. G. H. Richardson, and Mr. J. A. Ross, who in March, 1936, were appointed General Managers of Ransome & Marles Bearing Co. Ltd., have joined the board of that company.

Complimentary Luncheon to Lieut.-Col. Szlumper

Lieut.-Col. Gilbert S. Szlumper was entertained to luncheon at the Dorchester Hotel last Monday on the occasion of his appointment as General Manager of the Southern Railway in succession to Sir Herbert Walker, who retires on October 14. The opportunity was also taken of congratulating Mr. J. B. Elliot on his appointment as Assistant General Manager, and Mr. E. F. E. Livesey on his appointment as Development Officer.

Mr. E. Huskisson (General Manager, Thos. Cook & Son Limited) presided and others present were: Messrs. S. G. Catt (Pinchin Johnson & Co. Ltd.); P. A. Clews (European Manager, Canadian National Railways); A. Cornish (J. J. Edwards & Company); Lieut.-Col. E. R. Cooper (Ellerman Bucknall Line); Messrs. D. H. Drakeford (Nederland Royal Mail Line); H. G. Dring (European Passenger Manager, Canadian Pacific Railway); J. B. Elliot (Southern Railway); G. H. Griffiths (General Manager, Pullman Car Co. Ltd.); D. Handover (Passenger Manager, Imperial Airways Limited); W. Hinde (Shipping Manager, Thos. Cook & Son Limited); N. Hollis (P. & O. Steam Navigation Company); Shirley H. James (Pickfords Limited); J. A. Kay (Editor, The Railway Gazette); V. J. Kernan (Cunard White Star Limited); R. Laing (Union Castle Line); E. F. E. Livesey (Southern Railway); H. Longfellow (European Representative, United Air Lines of America); D. A. Mackinnon (Royal Mail Lines Limited); J. A. Milligan (late L.M.S.R.); H. Moxon (Moxon, Salt & Company); G. E. Orton (Commercial Assistant to the Superintendent of the Line, G.W.R.); W. Pontin (Raymond Whitcomb Limited); T. J. Potter (Travellers' Insurance Association); Baron C. von Pilar (Norddeutscher Lloyd); Messrs. B. H. Russell (Cunard White Star Limited); H. E. Roberts (District Passenger Manager, Euston, L.M.S.R.); W. H. Ruxton (Cunard White Star Limited); Commander H. St. John (Daimler Hire Limited); Messrs. Herbert Smith (Keith Prowse & Co. Ltd.); E. J. Smyth (Cunard White Star Limited); Tarleton Winchester (United States Lines).



Sir Nigel Gresley driving a model of one of his own L.N.E.R. Pacifics at the opening last week of the "Model Engineer" Exhibition

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Mr. W. R. J. Murray, M.Inst.C.E., who, as announced in The Railway Gazette of August 6, recently relinquished the position of Maintenance Engineer of the Buenos Ayres Great Southern & B.A. Western Railways, to take up that of Stores Superintendent of both companies, was presented with a silver salver and an illuminated address from his colleagues of the Chief Engineer's Department on August 14. The presentation was made by the Chief Engineer, Mr. F. L. Creswell, M.C., M.Inst.C.E.

Dr. Angel Sanchez Elia, Chairman, Local Board, Entre Rios and Argentine N.E. Railways, returned to Buenos Aires from Europe on August 14.

Danish State Railways Departmental Changes

From September 1 the Rates and Fares Office of the Danish State Railways has been combined with the Accountancy Office as one department. Mr. R. C. Jyrdal, formerly head of the Rates and Fares Office, has been appointed head of the combined department. Mr. Jyrdal has been in the State Railways service for 37 years, and in the Central Office since 1910. He was appointed head of the Rates and Fares Office in 1927. The Accountancy Office was formerly combined with the Staff Office under the leadership of Mr. E. Terkelsen. From the

Complimentary luncheon to Lieut.-Col. Gilbert S. Szlumper on his appointment as General Manager of the Southern Railway in succession to Sir Herbert Walker (see paragraph above)

Photo] [Rawood

above date Mr. Terkelsen has taken over the Operating Department.

INSTITUTE OF TRANSPORT PREMIUM AWARDS, 1936-37

The Council of the institute has made the following premium awards in respect of the session 1936-37:—

Railway Operating Medal (Donor: The Railway Companies Association)

To Mr. C. E. R. Sherrington, M.C. (former Member of Council), Secretary Railway Research Service, for his paper on "Transport and distribution of coal: methods in the United Kingdom and abroad compared."

Road Transport Medal (Donor: The Commercial Motor Users' Association)

To Mr. G. F. Bilbrough (Associate), Railway and Traffic Expert to the Birmingham Chamber of Commerce, for his paper on "This road and rail traffic business—some further reflections and conclusions."

Road Transport (Passenger) Medal (Donor: The London Passenger Transport Board)

To Mr. A. E. Kirkus, O.B.E. (former Member of Council), Director of Statistics, Ministry of Transport, for his lecture on "Road transport statistics."

Dock and Harbour Gold Medal (Donor: The Dock and Harbour Authorities Association)

To Sir Lionel A. P. Warner, C.B.E. (Member), General Manager and Secretary, Mersey Docks and Harbour Board, for his paper on "Some considerations of problems affecting port management."

Coastwise Shipping Medal (Donor: Sir Alfred Read)

To Mr. M. Arnot Robinson (Member), Joint Manager, Coast Lines Limited, Liverpool, for his paper on "The coasting trade—modern development and trend."

Institute Graduate Medal

To Mr. Charles F Klapper, of *Modern Transport*, for his contribution on "The organisation of the omnibus industry in Great Britain."

Institute Student Medal

To Mr. S. C. Lake, of the London Midland & Scottish Railway, for his contribution on "Passenger travel."

"Modern Transport" Premium

To Mr. D. H. P. West (Graduate), of the London Midland & Scottish Railway, for his contribution on "Accelerated transit of merchandise by rail."

We regret to record the death, on August 30, at the age of 80, of Mr. James C. Davies, who was Director-General of the United States Railroad Administration after the Great War. He had served a year as General Counsel to the United States Railway Administration, from June, 1920, to March, 1921, when he was appointed by President Harding as Director-General of Railroads. In connection with the post at that time there were involved the duties of agent of the President in liquidating and settling controversies between the Government and the railways growing out of Federal control. In the five years that Mr. Davies performed the duties involved by the dual position, much important work in connection with the return of the railways was consummated. He resigned as Director-General early in 1926 to return to private practice of law. Mr. Davies became connected with the Legal Department of the Chicago & North Western Railway in 1903. Eventually he became General Attorney for the company, with headquarters at Des Moines. In 1918 he moved to Chicago, when he was made General Solicitor of the company, which was at that time under the jurisdiction of the United States Railway Administration.

From the *London Gazette* of September 7. Territorial Army, Engineer and Railway Staff Corps—Stanley Bronislaw Carter, O.B.E., to be Major (September 8).

We regret to record the recent death of Mr. E. Hyllestad, Traffic Manager, Danish State Railways. Mr. Hyllestad, who was one of the General Manager's four departmental chiefs, was born in 1877 and passed through all ranks before, in 1933, he was appointed Traffic Manager, in which post he was in charge of the Operating Department as well as the rates and fares office.

Isle of Man Air Services

As announced on page 490 last week, the first stage in the projected unification of inland air routes in this country has been accomplished by a fusion of the interests of operators plying between the mainland and the Isle of Man. Hitherto, lines have been operated by Railway Air Services Limited (Manx Airway section, working on behalf of the L.M.S.R. and the Isle of Man Steam Packet Company); and by Blackpool and West Coast Air Services Limited, a subsidiary of Olley Air Services Limited. In future, these operations will be conducted by Isle of Man Air Services Limited, in which both the L.M.S.R. and the Isle of Man Steam Packet Company will take a substantial shareholding. The capital of the company, which is registered in the Isle of Man and holds the lease of Ronaldsway airport (I.O.M.), owning the officers, hangars, and equipment provided there, has been increased to £75,000. Appointments in connection with the company are recorded on page 531.

Railway ticket agents are being authorised to accept bookings for Isle of Man Air Services Limited, and passengers will enjoy the special luggage-in-advance and ticket inter-availability arrangements available to passengers by Railway Air Services. The growth of air travel to the Isle of Man is shown by the fact that from January to August this year no fewer than 18,000 passengers were carried to and from the Isle of Man by the Manx Airway (Railway Air Services), and Blackpool & West Coast Air Services; on the Saturday before August Bank Holiday the two operators between them carried 600 passengers.

Engineering and Marine Exhibition Luncheon

The opening at Olympia last Thursday of the fourteenth Engineering and Marine Exhibition was followed by a luncheon at which Eng. Vice-Admiral Sir Harold A. Brown, President of the exhibition, took the chair.

Sir Richard A. S. Redmayne, past-President of the Institution of Civil Engineers, speaking at the conclusion of the luncheon, said that the exhibition this year had branched into a new avenue and acquired extra merit by linking up with the welding and foundry industries.

Lieut.-Col. Dudley G. Gordon, President of the British Engineers' Association, emphasised the importance to the country both in peace, for its prosperity, and in war, for its defence, of the marine, foundry, engineering, and welding industries.

Mr. A. C. Turner, President of the Foundry Trades' Equipment and Supplies Association, recalled that his association had staged exhibitions of its own some years ago, but he considered that to link up with the Engineering and Marine Exhibition, as had now been done, was a step leading to more visitors and more potential buyers.

Mr. C. G. Bainbridge, Chairman of the Welding Exhibition Committee, said that the present was the first occasion on which a truly representative exhibition of welding had been held. Speaking of railway applications of welding, he said it was unfortunate that welded joints did not advertise themselves as conspicuously as other types of joint. Welding was the servant of many industries; it enabled designs to be simplified, production to be increased, production costs to be lowered, waste eliminated, and repairs to be executed to broken or worn parts, thus saving industry thousands annually.

At the conclusion of the luncheon, Admiral Brown presented Dr. H. S. Hele-Shaw, retiring Chairman of the Honorary Committee of Experts to the Exhibition, with a silver cup and a radiogram. Among those present were Sir Herbert Walker, Lieut.-Col. Gilbert S. Szlumper, and Mr. W. Reavell.

L.M.S.R. School of Transport

Speech by Sir Josiah Stamp following the ceremony of laying the foundation stone

Mr. G. L. Darbyshire, Chief Officer for Labour and Establishment, presided at a large gathering of L.M.S.R. officers and staff and their friends at Osmaston Park, Derby, on Wednesday afternoon, when Sir Josiah Stamp, Chairman and President of the Executive, performed the ceremony of laying the foundation stone of the L.M.S.R. School of Transport. It is expected that the building, which has been designed by Mr. W. H. Hamlyn, Architectural Assistant to the Chief Civil Engineer, will be completed by next May. Colonel L. Manton, D.S.O., O.B.E., late R.E., is the Principal of the school, and is now resident at Derby, supervising the layout and preparing the various courses of study and means for interchange of ideas.

L.M.S.R. officers and others present included: Mr. Ashton Davies, Chief Commercial Manager; Mr. W. K. Wallace, Chief Civil Engineer; Mr. W. A. Stanier, Chief Mechanical Engineer; Mr. S. J. Symes, Chief Stores Superintendent; Mr. C. E. Fairburn, Deputy Chief Mechanical Engineer and Electrical Engineer; Mr. W. H. Hamlyn, Architectural Assistant to Chief Civil Engineer; Mr. J. Shearman, Road Motor Engineer; Mr. G. H. Loftus Allen, Advertising and Publicity Officer; Mr. H. J. Rudgard, Divisional Superintendent of Operation, Derby; Mr. G. S. Bellamy, Works Superintendent (Locomotives), Derby; Mr. E. Pugson, Works Superintendent (Carriages and Wagons), Derby; Mr. J. Dickson, District Engineer, Derby (North); Mr. H. B. Everard, District Engineer, Derby (South); Mr. J. M. Kirkwood, District Goods and Passenger Manager, Derby; Mr. J. A. Kay, Editor, THE RAILWAY GAZETTE. Retired officers of the L.M.S.R. and constituent companies included: Mr. J. H. Follows, Sir Henry Fowler; Mr. H. F. Loney; Mr. E. D. Grasett; Mr. H. Geach.

Mr. G. L. Darbyshire in opening the proceedings welcomed the presence of Sir Josiah Stamp, Mr. E. B. Fielden (Deputy Chairman), and the Mayor of Derby (Councillor Mrs. E. Petty), and so many of the officers and staff of the company. Continuing, he said that the college was the first to be built in this country for the training of railwaymen. It would be a residential college accommodating 50 members of the staff for purposes of training, and the fact that the men would be working, and also taking part in sport together, would, he believed, tend to break down any tendency to a departmental outlook. The purpose of the college was to enable the best practices and traditions to be handed on to the younger members of the staff at the outset of their careers. Standard text-books on railway subjects would be prepared for the college students.

Sir Josiah Stamp, G.C.B., G.B.E., then performed the ceremony of laying the foundation stone, and in a speech afterwards said: "In recent years it has become a commonplace that education is a continuing process, and that we must extend its opportunities for professional men of all ranks. Mr. H. G. Wells, recently viewing the immense responsibility of teachers as implanting the seeds of knowledge in the next generation, said they must be kept up to date, and urged what are called 'refresher courses.' We know also of the post-graduate medical school, where medical men in practice can return from time to time to get in touch with the latest knowledge in a field larger than their own limited practical scope. Following on these lines the L.M.S.R. directors are emboldened to try a great new experiment so that alongside the investment of new capital in transport, the human side shall be continually kept abreast of the best methods in the service of the public. Transport is a widely scattered service, and one frequently comes across places where new ideas have been put into practice with great success, and old difficulties met in new ways. Those who happen to be in the neighbourhood and come into contact are influenced and slowly promulgate their new knowledge, but with the limited range of mobility in individuals the majority cannot come into touch with it, and it may be many years before they come, by the slow percolation of ideas, within its influence. There is no school save that of experience, to teach railwaymen how to use the latest methods, or to learn from science and engineering, and experience may depend upon locality and opportunity. It has been said that experience is a 'wasteful nurse, and learning teaches more in a year than experience in twenty.' The experiments already made by the L.M.S.R. in the general educational process of disseminating information by films and other means, has emboldened them to this larger scheme, so that the best be not the monopoly of the few, but be put at the service of all.

"Advance in method arises in various ways: First, a man of more than average enterprise and ingenuity may experiment and elaborate new methods with great success. These cannot be carried by word of mouth, but need personal contact for conviction, and that is difficult to obtain for the many on a wide scale. Second, a particular place may be overwhelmed, and break down with new problems, so that a desperate effort must be made to get over these troubles, and these have called for ingenuity and experiment and brought out results of value to everyone. Third, there is a constant flow of new ideas from other industries by direct application or by ingenious adaptation. Fourth, other people in other countries may have done the troublesome part of experimentation, leaving us to garner the fruits. But in whatever way an advantageous method has arisen, it is desirable to give prompt and wide access to it. We are fortunate on the L.M.S.R. in having a zealous staff, but the best goods agent even in Derby may well have something to learn from the best goods agent in Ross & Cromarty; and if we go outside the L.M.S.R. and find the worst railwayman in all the world he will have his uses in showing us how not to do it!

"We propose to proceed on the principle 'let such teach others who themselves excel.' But I have no doubt that when men come from all quarters a clash of ideas on the practical application of a general principle must, in itself, promote an even better practice for the succeeding course. For in the enthusiasm of novelty, an idea may be too easily generalised, and its limitations not realised. Every generalisation is a theft from the truth. The school will, therefore, not be a mere transmitter of ideas, but a clearing house also.

"I know, of course, that there are many sceptics of such a course. We are told you cannot teach an old dog new tricks. A young man asked if he favoured higher education for women said: 'No, if they are pretty it's unnecessary, and if they are not, it's inadequate!' Gibbon was quite as cynical, if not as flippant, when he said 'The power of education is seldom of much efficacy except in those dispositions where it is almost superfluous.' But we believe that in the right atmosphere, even the man who has not been used to learning by listening, will gain knowledge through these methods. Certainly it is not intended that the courses shall degenerate into mere routine lectures. It is recorded that one student said 'Our economics professor talks to himself,' and the other replied 'So does ours, but he doesn't know it—he thinks we are listening!' I know well that many say a man only learns by his own experience, but I think that those who never learn by the experience of others are unlikely to make the best of their own. Those who distrust education will agree with the American who said that it takes a mighty smart fellow to succeed with a good education! But all our experience is to trust it, and to encourage the appetite for it.

"It is hoped that the school as an institution will provide yet another bond between the departments and the widely scattered districts in enabling them to understand each other and to contribute to the success of the whole in a way that only personal intercourse can establish. A signature or an initial have been known for years—when the man behind it appears, it takes on a new kindness. So that although there may not be an 'old school tie,' there will be, at any rate, the equally tangible, though invisible, tie of the closer bond of work together for the common end."

NOTES AND NEWS

Monk Bretton Passenger Station to be Closed.—The L.M.S.R. announces the closing from Monday next, September 27, of Monk Bretton passenger station, situated between Cudworth and Barnsley. An adequate bus service for passengers using Monk Bretton will be provided between Cudworth and Barnsley.

Institute of Transport.—Sir Alexander Gibb, G.B.E., C.B., F.R.S., will be inducted as President of the Institute of Transport and will deliver his presidential address at the first ordinary meeting of the institute for the 1937-38 session, which will take place at the Institution of Electrical Engineers on Monday, October 11, beginning at 5.30 p.m.

Cordoba Central Railway.—Holders of the 4½ per cent. first debenture stock are informed that the half-yearly interest due October 1, 1937, together with the arrears, has been postponed until April 1, 1938, or until such later date as may be determined. The Bill for authorising the Argentine Government to purchase the company's railway has not yet been considered by Congress.

New G.W.R. Halt in Wales.—A new Great Western Railway halt at Six Bells, situated between Abertillery and Aberbeeg, will be opened on Monday, September 27, when the winter train service comes into operation. All the local weekday and Sunday services calling at these two stations will call at the halt, and cheap local bookings will be given to places in the surrounding district.

Rhodesian Railways Budget.—According to the *Southern Rhodesian Government Gazette*, the estimated disposable revenue for the financial year 1937-38, as submitted to the Railway Commission, is £1,567,900, this sum being the difference between the £4,361,000 estimated receipts and £2,520,900 estimated working expenses. With an appropriation from depreciation funds, the total disposable revenue is estimated at £1,744,227, of which £1,100,700 will go to debenture interest and sinking fund, £75,000 to dividends, £38,000 to rates stabilisation, and £530,527 to reserve.

New Premises for Switchgear & Cowans' Subsidiaries.—The Eastnor Electric Co. Ltd., a specialist in die casting in all metals, has a new factory in course of erection at Elsinore Road, Old Trafford, Manchester. Modern and efficient gravity and pressure die-casting machines will be put into service here, capable of rapidly producing intricate die castings in all metals, including brass, copper and electron. Also in Elsinore Road, Buckley Gears Limited is erecting a new factory to specialise in the production of all types of machine-cut gears of sizes up to 54 in. This firm has now been registered as a limited company with a view to complete reorganisation and expansion. Both concerns are recently-acquired subsidiaries of Switchgear & Cowans Limited.

Accident to Bordeaux-Paris Express.—A collision occurred on Monday night between the relief portion of a Bordeaux-Paris express and the main train, apparently owing to the latter having become derailed near Vars, Paris-Orleans main line, about 14 km. on the Paris side of Angoulême. It is reported that eight persons were killed and 25 injured.

Irish Through Rates with Britain.—The British and Irish railways and cross-Channel steamship companies carrying passengers and merchandise (including livestock) at through fares and rates between places in Great Britain and places on the Irish railways, give notice that the charges in operation on September 30, 1937, will (with certain exceptions) be increased on and from October 1 next, by 5 per cent. or thereabouts.

Sentinel Geared Locomotives.—Eight geared locomotive units for the Egyptian State Railways are at present nearing completion at the Shrewsbury works of the Sentinel Waggon Works (1936) Limited. On Tuesday, September 14, tests of one of these units were carried out at Shrewsbury before a representative company of railway officials from home, Colonial, and Indian railways, who were very favourably impressed.

Exports to Spain.—The British Chamber of Commerce for Spain has recently issued from its London office a circular giving a comparison of the figures published in the Board of Trade returns of the trade between Great Britain and Spain in the first half of the last three years. These comparative figures afford a clear idea of the loss suffered by British interests, both here and in Spain, since the outbreak of civil war. Exports of machinery, for example, which had risen to £251,258 in the first half of 1936, fell to £26,848 in the corresponding period of 1937. Even more striking are the figures for "motor-cars, locomotives, ships and aircraft," under which head exports totalling £334,177 in the first half of 1935, and in 1936 £326,934, fell this year to £17,075.

Railway Club Lecture on Early West Midlands Projects.—The winter session of meetings of the Railway Club opened on September 9, at the Royal Scottish Corporation Hall, Fetter Lane, E.C.4, when members heard an instructive and humorous paper by Mr. J. Simmons, on "Some Railway Schemes in the West Midlands, 1833–1865." The lecturer detailed the many projected lines in an area bounded approximately by Worcester, Banbury, Didcot, and Stroud—mentioning, among others, a scheme for a railway from Blockley to Ross. Mr. Simmons also dealt at some length with the proposed station at St. Giles, Oxford, and the carriage factory which the Great Western Railway planned to build at Cripley Meadow, Oxford, in 1865. The paper was illustrated by lantern slides and maps.

Repairs to Crystal Palace Tunnel.—Work will begin next Sunday on repairing the Crystal Palace tunnel, Southern Railway, the gradual sinking of which has caused a crack to develop at the Gipsy Hill end. The repairs will last until June, and while they are in progress a single-line shuttle service will be operated through the tunnel, between Gipsy Hill and Crystal Palace (Low Level) stations. Similar repairs were carried out some 20 years ago, then occupying nine months.

Railwayman's Broadcast on Bee-keeping.—Mr. R. Gamble, of the L.N.E.R. Advertising Department, who has been broadcasting for over a year as the B.B.C. bee-keeping expert, is introducing a series of microphone talks with various world-famous apiarists. On October 1, at 7.10 p.m., in the National programme, he will discuss Buckfast Abbey, the monks, and their bees, with Br. Adam, who is considered one of the greatest bee-keeping authorities of the present time.

Light Railway and Transport League.—The society formed this year under this designation announces that the title has been changed to the Light Railway Transport League, since tramways, and their development towards more orthodox types of railway, are its chief interest and the old title was misleading. In the hope of securing a larger provincial membership it has been decided as an experiment to split up the society into sections, each covering a certain area of the country.

Seed Train in Argentina.—An all-white railway train, with a freight of honey, chickens, sweets, and selected seeds, has set out from Buenos Aires on a tour of neighbouring districts. It is equipped with demonstration cars and carries a staff of lecturers from the Dolores Agricultural College, but its main purpose is to sell high-grade seed to local farmers. The seed train, as it is called, is organised by the Department of Agriculture of the Argentine Province of Buenos Aires, with the aim of improving local crops of maize and other cereals and of giving practical instruction to farmers in a novel way.

French Poster Exhibition at Charing Cross.—An exhibition of French railway posters is at present being held in the general waiting room at Charing Cross station, Southern Railway. Many of the exhibits, which are fully representative of the high artistic standard attained in this form of advertising in France, have already been reviewed in these columns, and among them is the prize-winning "Téléferique d'Artouste," issued by the P.O.-Midi. Notable newcomers are posters of Rheims and the Ardennes published by the Est, and an Etat

production showing Mont St. Michel. Interest is added to the exhibition by the fact that all exhibits are labelled with the journey time from London of the places portrayed, and numbered to correspond with their positions as shown on a large wall map of France. In the centre of the room are illuminated dioramas of Cannes and Menton in the Midi, and of Munster and Barr in the Vosges.

Additional Buffet Car Services, L.N.E.R.—In addition to the four new buffet-car trains which, as already announced, are to run daily between Liverpool Street and Cambridge, four buffet car services will run daily from September 27 between Leeds, York, and Scarborough, on which service corridor stock was introduced last year. Corridor stock and buffet cars are also to be used from the same date on the hourly expresses between Newcastle and Sunderland, West Hartlepool, Stockton, and Middlesbrough, and a total of 28 trains daily—14 in each direction—will be buffet-car-equipped on this service.

Ottoman Railway Holding Company.—Speaking at the annual meeting of the Ottoman Railway Holding Company on September 21, Viscount St. Davids said that with regard to the interest on their Turkish bonds—their most important item of revenue—for the time being the Turkish Government was only paying 50 per cent. in cash in sterling on the due dates. The balance was satisfied in Turkish currency, which was subsequently converted into francs. He would like Great Britain to take a much greater share in the ambitious programme of construction upon which the Turkish Government had embarked. Enormous sums were being spent on the building of railways, factories, electrification, &c., but unless Britain bought a much greater proportion of Turkey's exports these large contracts must go elsewhere.

Northern Ireland Traffics.—Passenger receipts for the first six months of 1937 on railways wholly in Northern Ireland amounted to £114,837, against £115,715 for the corresponding period of 1936, and the number of passengers (exclusive of season-ticket holders) fell from 2,372,792 to 2,266,698. Merchandise and mineral tonnage for the six months fell from 329,582 tons to 304,114 tons, and the total goods traffic receipts from £120,115 to £111,636. Railways partly in Northern Ireland carried 2,228,795 ordinary passengers in the first six months of 1937, against 2,450,867 in the first half of 1936, but total passenger receipts rose from £189,149 to £189,884. The quantity of merchandise and minerals carried fell from 489,141 tons to 474,568 tons, and total goods traffic receipts from £319,966 to £313,406. On the purely northern railways the number of livestock carried in the first six months of 1937 rose from 84,949 to 116,333, and on the cross-border railways from 351,328 to 385,668.

Institute of Welding Dinner

The first annual dinner of the Institute of Welding was held in London last Tuesday under the chairmanship of Sir William J. Larke, Vice-President, who read a message from Sir Alexander Gibb, President, regretting his absence owing to ill health.

Dr. Leslie Burgin, the Minister of Transport, proposed the toast of "The Institute of Welding," and spoke of the importance of co-operative effort in research into the problems of welding, which was one of the fundamental purposes of the institute. There was, he considered, no reason why this country should lag behind others in the application of welding, yet it could not be denied that other countries were in some respects ahead of us. The Institute of Welding would serve a vitally important purpose in providing a centre of information and experience in welding; and in ensuring that any regulations or standards which might be set up for the control of welding practice should be based on a foundation of scientific knowledge and practical experience. He assured the members of the Government's interest in the activities and objects of the institute.

Sir William Larke, responding, referred to the rapid increase in the use of welding, and to the fact that in nearly all applications lack of sufficient accurate information was preventing advantage being taken of the full economies possible. The Institute of Welding had been set up with the friendly co-operation of the principal technical societies, the financial support of the Department of Scientific and Industrial Research, and a strong financial and personal backing from industry. The attendance of nearly 400 at the first annual dinner indicated the extent of the interest which was being taken in the new organisation, which already had a membership of over 1,000. He referred to the research fund, the basis of which had been provided and guaranteed to the institute for a period of five years by a group of firms associated with the manufacture or the use of welding equipment, and with the metallurgical industries. It was hoped that the funds would be augmented by additions to the guarantee fund, and that the bulk of the money from the subscriptions of the industrial corporate class of membership would also be available for research. The industrial corporate members consisted of companies, firms, and industrial associations interested in the methods and means for welding, and in the welding processes. Sir William Larke then proposed the toast of "The Guests," to which Mr. F. Handley Page, Vice-President of the Royal Aeronautical Society, responded.

Staff and Labour Matters

Railway Wages: Cost of Living Bonus

At September 1 the cost of living according to the *Ministry of Labour Gazette* was 55 per cent. above the pre-war level, and from Friday next, October 1, a considerable number of railway employees in conciliation grades will, by reason of the operation of the sliding scale agreement, receive an increase of one shilling a week cost of living bonus. This wage increase is, of course, additional to the concessions awarded by the Railway Staff National Tribunal in its recent Decision No. 3.

General Wage Increases

The September issue of the *Ministry of Labour Gazette* contains some interesting statistics relating to changes in rates of wages in industry generally. During the first eight months (January-August) of this year the full time rates of wages of about 3,920,000 workers were increased by nearly £485,000 a week. This works out at an average of approximately 2s. 6d. a head. Of the number of workers mentioned, engineering accounted for 622,000 and transport for 496,000. Changes in wages which came into operation in August resulted in an increase of about £98,700 in the weekly full-time wages of 1,307,000 workpeople, and in a decrease of £40,400 in those of 333,500 workpeople. The principal groups affected by the August increases were men in the engineering industry and employees of the main-line railway companies. No important changes in hours of labour were reported in August.

Road Transport Wages

When the wages committee of the Joint Industrial Council of the Road Passenger Transport Industry met at the Ministry of Labour on Friday last, September 17, it was decided that the claim of the workers for improved wages and conditions should be referred to a sub-committee. The hearing was adjourned until early October. The claim affects nearly 70,000 workers in municipal transport undertakings.

RAILWAY DOCK OWNERS.—Owing to a typographical error in the paragraph on page 495 in last week's issue, entitled "L.M.S.R. Educational and Instructional Films Programme," the L.M.S.R. was referred to as "the largest" instead of "large" owners of docks and ports in Great Britain. The two largest railway dock owners are, of course, the Great Western and the London & North Eastern Railways.

British and Irish Traffic Returns

GREAT BRITAIN	Totals for 37th Week			Totals to Date		
	1937	1936	Inc. or Dec.	1937	1936	Inc. or Dec.
	£	£	£	£	£	£
L.M.S.R. (6,870¼ mls.)						
Passenger-train traffic...	540,000	536,000	+ 4,000	19,805,000	19,036,000	+ 769,000
Merchandise, &c. ...	514,000	496,000	+ 18,000	17,988,000	17,480,000	+ 508,000
Coal and coke ...	251,000	229,000	+ 22,000	9,307,000	8,795,000	+ 512,000
Goods-train traffic ...	765,000	725,000	+ 40,000	27,295,000	26,275,000	+ 1,020,000
Total receipts	1,305,000	1,261,000	+ 44,000	47,100,000	45,311,000	+ 1,789,000
L.N.E.R. (6,315 mls.)						
Passenger-train traffic...	353,000	350,000	+ 3,000	12,977,000	12,393,000	+ 584,000
Merchandise, &c. ...	341,000	329,000	+ 12,000	12,361,000	11,913,000	+ 448,000
Coal and coke ...	245,000	222,000	+ 23,000	9,034,000	8,486,000	+ 548,000
Goods-train traffic ...	586,000	551,000	+ 35,000	21,395,000	20,399,000	+ 996,000
Total receipts	939,000	901,000	+ 38,000	34,372,000	32,792,000	+ 1,580,000
G.W.R. (3,738½ mls.)						
Passenger-train traffic...	231,000	232,000	— 1,000	8,374,000	8,141,000	+ 233,000
Merchandise, &c. ...	208,000	200,000	+ 8,000	7,319,000	7,023,000	+ 296,000
Coal and coke ...	110,000	98,000	+ 12,000	4,100,000	3,670,000	+ 430,000
Goods-train traffic ...	318,000	298,000	+ 20,000	11,419,000	10,693,000	+ 726,000
Total receipts	549,000	530,000	+ 19,000	19,793,000	18,834,000	+ 959,000
S.R. (2,157 mls.)						
Passenger-train traffic...	336,000	334,000	+ 2,000	12,480,000	11,853,000	+ 627,000
Merchandise, &c. ...	70,000	68,000	+ 2,000	2,269,500	2,326,500	— 57,000
Coal and coke ...	29,000	29,000	—	1,093,500	1,125,500	— 32,000
Goods-train traffic ...	99,000	97,000	+ 2,000	3,363,000	3,452,000	— 89,000
Total receipts	435,000	431,000	+ 4,000	15,843,000	15,305,000	+ 538,000
Liverpool Overhead ... (6½ mls.)	1,326	1,168	+ 158	48,427	44,467	+ 3,960
Mersey (4½ mls.) ...	4,227	4,296	— 69	154,208	149,189	+ 5,019
*London Passenger Transport Board ...	559,800	567,300	— 7,500	6,667,900	6,659,000	+ 8,900
IRELAND						
†Belfast & C.D. pass. (80 mls.)	2,592	2,829	— 237	102,499	103,610	— 1,111
,, ,, goods	485	402	+ 83	17,797	20,174	— 2,377
,, ,, total	3,077	3,231	— 154	120,296	123,784	— 3,488
Great Northern pass. (543 mls.)	12,800	11,900	+ 900	425,550	414,100	+ 11,450
,, ,, goods	9,600	9,550	+ 50	346,250	360,550	— 14,300
,, ,, total	22,400	21,450	+ 950	771,800	774,650	— 2,850
Great Southern pass. (2,076 mls.)	41,291	41,191	+ 100	1,399,506	1,387,284	+ 12,222
,, ,, goods	39,458	42,235	— 2,777	1,502,791	1,531,556	— 28,765
,, ,, total	80,749	83,426	— 2,677	2,902,297	2,918,840	— 16,543

* 12th week (before pooling) † 38th week

Forthcoming Events

Sept. 16–25.—*The Model Engineer* Exhibition, at Royal Horticultural Hall, Vincent Square, London, S.W.1.

Sept. 25 (*Sat.*).—Permanent Way Institution (Manchester-Liverpool), at Blackpool, 3 p.m. "Railway Drainage," by Mr. F. McCandlish.

Sept. 29 (*Wed.*).—Institution of Locomotive Engineers (London), at Inst. of Mechanical Engineers, Storey's Gate, S.W.1, 6 p.m. Presidential Address by Lt.-Col. F. R. Collins, D.S.O.

Sept. 30 (*Thurs.*).—Permanent Way Institution (Brighton), at Welfare Room, Eastbourne, 7 p.m. "Leads of Crossings on Basis of Unit Angles," by Mr. R. Gurd.

Oct. 4 (*Mon.*).—Society of Engineers, at Geological Society, Burlington House, Piccadilly, London, W.1, 6 p.m. "Engineering and the new Economics," by Mr. H. Chatley.

Stephenson Locomotive Society (London), at King's Cross Station, L.N.E.R., 6.30 p.m. "The Control of Main Speeds on the G.W.R.," by Mr. C. Roberts.

Yorkshire Transport Society, at County Restaurant, Bridge Street, Bradford, 7.30 p.m. "The Story of the London Bus."

Oct. 5 (*Tues.*).—L.N.E.R. (York) Lecture and Debating Society, at Railway Inst., Queen Street, 6.45 p.m. "A Survey of Modern British Signalling Installations," by Mr. C. Carslake.

BRITISH INSULATED CABLES ADDRESS.—In the course of our article last week on "Electric Spot Welding at Doncaster Works," L.N.E.R., the address of British Insulated Cables Limited was incorrectly quoted as "Preston, Lancs." The address of the company, which supplied the welding machine described in the article is, of course, Prescot, Lancs.

TRANSPORT COURSES AT THE CITY OF BIRMINGHAM COMMERCIAL COLLEGE.—The Transport Department of the City of Birmingham Commercial College has been developed with the full co-operation of the University of Birmingham, the Institute of Transport (Local Section) and the railway and road transport companies. The courses, which have recently been remodelled and brought up to date, are intended for those who hope to rise to executive positions in the transport world and also for business men who desire to study the bearing of transport questions on other forms of commercial enterprise. The programme of classes for the session 1937-8 is now available.

British and Irish Railway Stocks and Shares

Stocks	Highest 1936	Lowest 1936	Prices Sept. 22, 1937	Prices Rise/Fall
G.W.R.				
Cons. Ord. ...	64¼	45½	65	+2
5% Con. Prefce. ...	126½	116¾	116⅛	—
5% Red. Pref. (1950)	113	108½	109⅛	—
4% Deb.	119½	110½	105½	—
4½% Deb.... ...	121	114	111	—
4⅛% Deb.... ...	129	121	116½	—
5% Deb.	141	134	128½	—
2½% Deb.... ...	79⅛	74	69½	—
5% Rt. Charge ...	136⅛	130	127½	—
5% Cons. Guar. ...	135¼	127¾	124	—
L.M.S.R.				
Ord.	35⅝	17	31½	+1
4% Prefce. (1923)	83	52½	75	−½
4% Prefce. ...	92¾	81	83	+1
5% Red. Pref. (1955)	109¼	103¼	106	—
4% Deb.	111¾	105 9/16	101½	—
5% Red. Deb. (1952)	119⅜	115½	112⅛	—
4% Guar. ...	106¾	101⅝	99½	—
L.N.E.R.				
5% Pref. Ord. ...	14	9	10	—
Def. Ord.	7¼	4¾	5	+⅛
4% First Prefce.	79¼	55¼	72	—
4% Second Prefce.	31⅞	18¼	28	−½
5% Red. Pref. (1955)	100½	77¾	98	—
4% First Guar. ...	104½	98¾	96	—
4% Second Guar.	99	90	89½	—
3% Deb.	85¾	79	76	—
4% Deb.	109¾	104½	100½	—
5% Red. Deb. (1947)	116¼	110½	108⅛*	−2
4½% Sinking Fund Red. Deb.	111⅛	107½	108	—
SOUTHERN				
Pref. Ord.... ...	98¾	82½	90½	−½
Def. Ord.	27⅜	20⅛	21½	—
5% Pref.	120¾	118½	113⅛	—
5% Red. Pref. (1964)	119¾	115¼	113⅛	—
5% Guar. Prefce.	136	129½	125	—
5% Red. Guar. Pref. (1957)	120	115¾	114	—
4% Deb.	117 15/16	109½	104	—
5% Deb.	140	134	126½	—
4% Red. Deb. 1962–67	116½	110	106½	—
BELFAST & C.D.				
Ord.	9	4½	4	—
FORTH BRIDGE				
4% Deb.	107	105	101½	—
4% Guar. ...	107 5/16	104	100½	—
G. NORTHERN (IRELAND)				
Ord.	19½	9¾	6⅞	−⅜
G. SOUTHERN (IRELAND)				
Ord.	63	41	32¼	−1
Prefce.	65	46	40	−½
Guar.	97¼	81	73½	+½
Deb.	99¾	83¼	89½	+1
L.P.T.B.				
4½% "A" ...	127¾	121	113½	—
5% "A"	138¼	133½	125⅛	—
4½% "T.F.A." ...	111½	108⅛	105	—
5% "B"... ...	131¾	123¾	117½	—
"C"	112½	93	78½	−1½
MERSEY				
Ord.	40¾	23	29½	—
4% Perp. Deb. ...	103	98	97	—
3% Perp. Deb. ...	78	74⅝	74⅛	—
3% Perp. Prefce.	68⅞	63¼	66½	—

* ex dividend.

CONTRACTS AND TENDERS

The Vulcan Foundry Limited has received an order from the Rohilkund & Kumaon Railway for four 4-6-0 class P passenger locomotives to be supplied to the inspection of Messrs. Rendel, Palmer and Tritton.

The Hunslet Engine Co. Ltd., has received an order from the Peruvian Corporation Limited for a Hunslet diesel-mechanical locomotive to be supplied to the inspection of Messrs. Livesey & Henderson. The locomotive is to work under exceptional altitude conditions and is to be capable of hauling considerable loads up severe inclines. The engine is to be manufactured by Mirrlees, Bickerton & Day and a Büchi supercharger is to be supplied. A Vulcan Sinclair hydraulic coupling will be fitted and the transmission will include auxiliary gear-change clutch, patent pre-selective gear change mechanism, and automatic control.

A Belgian firm has, according to the *Vingtieme Siecle*, received an order from the South African Railways and Harbours Administration for railway coaches to the value of £135,000.

The South Indian Railway Administration has recently placed the following orders to the inspection of Messrs. Robert White & Partners :—

Linley & Company, nine copper firebox plates.
H. J. Skelton & Company, 22 tons of universal plates for plate girders.
Mather & Platt Limited, three train-lighting dynamos.
Guest, Keen & Nettlefolds Limited, 10,000 steel taper keys for sleepers.

Skoda (India) Limited has received orders from the Indian Stores Department for a total of 16 steel locomotive axles and 14 steel locomotive tyres.

Leyland Motors Limited has received an order from the Northern Ireland Road Transport Board for 10 Lion passenger road vehicles.

Heatly & Gresham Limited has received an order from the Indian Stores Department for one steam-operated 3-ton drop hammer.

William Jacks & Co. Ltd. has received an order from the Indian Stores Department for a crude oil-engine-driven tractor.

Stahlunion Export G.m.b.H. has received orders from the Bikaner State Railway Administration, to the inspection of Messrs. Rendel, Palmer & Tritton, for 113,130 fishbolts.

The A.B.C. Coupler & Engineering Co. Ltd. has received an order from the Madras & Southern Mahratta Railway Administration, to the inspection of Messrs. Rendel, Palmer & Tritton for a quantity of carriage and wagon buffer parts.

The Bombay, Baroda & Central India Railway Administration has placed orders to the inspection of Messrs. Rendel, Palmer & Tritton with Usines Acieries Allard for 56 cast steel wagon axleboxes and with George Turton Platts & Co. Ltd. for 68 forged steel buffers for wagons.

The Madras & Southern Mahratta Railway has placed the following orders to the inspection of Messrs. Rendel, Palmer & Tritton :

Peter Lind & Co. Ltd., 7 copper firebox plates.
Steel, Peech & Tozer, 8 steel straight axles for locomotives.
Fried. Krupp A.-G., 68 steel carriage tyres and 72 steel wagon tyres.
Thos. Firth & John Brown Limited, 36 steel axles for carriages and wagons.
George Turton Platts & Co. Ltd., 120 buffer plungers and springs for carriages and wagons.
A.B.C. Coupler & Engineering Co. Ltd., Quantity carriage and wagon parts.
Mannesmann Trading Co. Ltd., 1,000 steel boiler tubes.

Whitelegg & Rogers Limited has received an order from the Crown Agents for the Colonies for 29 engine sets of Ajax grease-lubricating equipment for locomotives of the Nigerian Railways to be converted from oil to grease lubrication, and an order from the Madras & Southern Mahratta Railway for 160 Ajax axlebox grease lubricators for converting 2-8-0 and 4-8-0 type locomotives for oil to grease lubrication.

The Crown Agents for the Colonies have recently placed the following orders :—

English Electric Co. Ltd. : Alternators.
P. & W. Maclellan Limited : Steel sheets, mild-steel plates and angles.
Turners Asbestos Cement Company : Asbestos cement sheets and everite pipes.
General Electric Co. Ltd. : Automatic switchboards.
V. & R. Blakemore : Tools and brass bolts.
T. Bolton & Sons Ltd. : Cadmium copper wire, copper plates and piping.
Cement Marketing Co. Ltd. : Cement.
Stanton Ironworks Co. Ltd. : Cast-iron pipes and fittings.
Staveley Coal & Iron Co. Ltd. : Cast-iron piping.
City Electrical Company : Control panels for pumping station.
Phosphor Bronze Co. Ltd. : Copper and gunmetal.
R. Johnson & Nephew Ltd. : Copper wire.
Wolverhampton Corrugated Iron Co. Ltd. : Galvanised corrugated iron and corrugated steel sheets.
W. C. Jones Limited : Cotton waste.
W. T. Henley's Telegraph Works Co. Ltd. : Electric cable.
Austinlite Limited : Electric generating plant.
Vickers-Armstrongs Limited : Floating pumping set.
R. H. Symonds Limited : Hard-drawn copper wire.
British Insulated Cables Limited : Insulated cable and telephone cable.
Taylor, Tunnicliff & Co. Ltd. : Insulators.
Marryat & Scott Limited : Lift and elevators.
Whitehead Iron & Steel Co. Ltd. : Mild-steel rods and round bars.
National Gas & Oil Engine Co. Ltd. : Oil engines.
United Steel Cos. Ltd. : Rails and fishplates.
Stewarts and Lloyds Limited : Steam piping, steel poles, and wrought-iron piping.
Brown, Bayley's Steel Works Limited : Steel tyres.
W. T. Bowie & Co. Ltd. : Steel wire ropes.
British Ropes Limited : Steel wire ropes.
Dorman, Long & Co. Ltd. : Steelwork for power station.
General Electric Co. Ltd. : Telephones.
Capper, Pass & Son Ltd. : Tin ingots.
J. Spencer Limited : Tubular arms.
J. Stone & Co. Ltd. : Phosphor bronze.
W. & T. Avery Limited : Wagon weighbridges.

Extensive Railway Orders for Belgian Industries

The Administrative Board of the Belgian National Railways has, according to Reuters Brussels correspondent, decided on the programme to be carried out in 1938. A total expenditure of fr. 297,000,000 is involved, of which fr. 214,000,000 is to be provided by the company and fr. 83,000,000 by public funds. The coal-purchasing programme for the six months beginning October 1 has been approved. The quantity is 1,100,000 tons, of which 94 per cent. will be supplied by the Belgian coal industry. It has been decided to construct six new express locomotives and 120 steel coaches for international trains. The board has also authorised the buying of 1,080,000 sleepers and a large quantity of timber. An order for 50,000 metal sleepers will be given to the Belgian steel industry.

Railcars and Power Bogie for India

Tenders are invited by the Indian Stores department for the supply and delivery of 11 diesel railcars and one power bogie complete with power unit and transmission equipment for the North Western Railway. Tenders endorsed " Tender for Order No. E. 1696 for Diesel Railcars for the North Western Railway " should be addressed to the Chief Controller of Stores, Indian Stores Department ; (Electrical Section) New Delhi, by whom they will be received up to November 20. A copy of the specifications and general conditions of tender is available on loan from the Department of Overseas Trade, London.

Tenders are invited by the Chief Controller of Stores, Indian Stores Department (Electrical Section), Simla, receivable by October 28, for the supply and erection of one 140/150 kW. oil-engine-driven alternator set, two 20 kW. oil-engine-driven alternator sets, and high-tension and low-tension switchgear.

The South African Railways & Harbours Administration is calling for tenders (Tender No. 1447) for the supply and delivery of approximately 223 tons of structural steelwork for bridges. Tenders endorsed " Tender No. 1447 for Bridgework " should reach the Chief Stores Superintendent, Park Station Chambers, Rissik Street, Johannesburg, by November 8.

St. Austell Station Improvements, G.W.R.—The existing buildings of the G.W.R. St. Austell station are to be demolished, and new ones erected. On the down side these will consist of the booking office, ladies' room and stationmaster's office. Those on the up side will include a general waiting room, ladies' room, rooms for the staff, and stores. Part of the platforms will have verandah covering, which will also be provided over the station approach. Improved station lighting will be installed.

OFFICIAL NOTICES

The Bengal & North Western Railway Company Limited

THE Directors are prepared to receive Tenders for the supply of :—

400 COVERED GOODS WAGONS (I.R.C.A. M.A.1 Type) complete with hand brake and piped for vacuum brake; and
800 PAIRS WHEELS AND AXLES

as per Specification to be seen at the Company's Offices.

Tenders addressed to the undersigned, and envelope marked "Tender for Wagons or Wheels and Axles," as the case may be, with name of firm tendering, to be lodged not later than Noon on the 1st day of November, 1937.

For each Specification a fee of £1 will be charged, which cannot, under any circumstances, be returned.

The Directors do not bind themselves to accept the lowest or any Tender.

By Order of the Board,
J. WILLIAMSON,
Managing Director.
Secretary.

237, Gresham House,
Old Broad Street,
London, E.C.2.
22nd September, 1937.

APPLICATIONS are invited for the position of Technical Representative in China. Essential qualifications are good education, appearance and address, with tactful personality, and experience of conducting important negotiations; and at least ten years' experience of Locomotive Engineering (designing, manufacture, inspection). Knowledge of China an advantage but not essential. Applications stating age, salary expected, and full details of experience and qualifications to be sent to MR. J. W. VAUGHAN, Secretary of the Locomotive Manufacturers' Association, 21, Tothill Street, London, S.W.1.

South Indian Railway Company Limited

AN Assistant Mechanical Engineer is required on the cadre of the Locomotive, Carriage and Wagon Workshops of the South Indian Railway.

2. Applications are invited from candidates, preferably not over 35 years of age and who have passed the qualifying examination for Associate Membership of the Institution of Civil Engineers or the Institution of Mechanical Engineers, or who have obtained a degree or diploma recognised as granting exemption from such qualifying examination. Candidates should in addition have served for at least five years as pupils or apprentices in the locomotive workshops and drawing office of a British railway or a firm of locomotive builders of repute, and on the footplate. They should also have held responsible positions in workshops employing the latest methods of production, planning and progress.

3. The salary of the appointment, which in the first instance will be for three years, will commence at rupees 350 per mensem for the first year, rising by annual increments of rupees 25 per mensem to (in the event of extended service) rupees 450 per mensem; and rupees 500 per mensem in the seventh year of service. The commencing salary may be increased according to the qualifications of the successful candidate.

4. If the successful candidate is of non-Asiatic domicile, Overseas Pay at the following rates will be allowed in addition to the salary mentioned in paragraph 3 :—

	Per mensem.
1st to 4th year of service ...	Rupees 150.
5th to 7th year of service...	Fifteen pounds sterling.
8th to 11th year of service	Twenty-five pounds sterling.
12th year onwards	Thirty pounds sterling.

5. If the successful candidate is of non-Asiatic domicile a 1st class passage to India will be provided by the Company, as also, subject to the terms of the agreement, a free passage home in the event of the termination of the service at or before the end of the three years, and if the employment is extended beyond that period, the employee will become eligible for certain free passage concessions for himself and his family.

6. Salary will commence from the date of embarkation for India.

7. The successful candidate will be entitled to the benefits of the Railway Provident Institution.

8. Forms upon which application must be made may be obtained on application by postcard to Messrs. Robert White & Partners, 3, Victoria Street, London, S.W.1, the Consulting Engineers to the Company.

E. A. S. BELL,
Managing Director.

London, S.W.1.
22nd September, 1937.

RAILWAY AND OTHER REPORTS

Peruvian Corporation Limited.—The Peruvian Corporation announces that it will pay, on October 1, to holders of the 6 per cent. first mortgage debentures on account of interest, the sum of £3 per cent., less tax. This payment will be made in full discharge of Coupon No. 89 representing the instalment of interest due October 1, 1934.

Sorocabana Railway.—The advisory committee acting on behalf of the holders of the 5½ per cent. cumulative income first debentures of this company announces that the sterling funds available for distribution on account of the coupon due October 1, 1937, on these debentures amount to £17,713. The committee has therefore fixed the interest which will be payable on and after October 1 on the £1,489,040 first debentures outstanding at 1 per cent., an amount of £2,823 being carried forward to the credit of the first debenture holders.

Bolivia Railway.—Net earnings for the half-year to June 30 last are sufficient to pay interest of 0·448 per cent., on and after October 1, on the 5 per cent. mortgage and collateral trust income bonds. The balance required to enable interest of 1½ per cent. (6s. on each £20 bond) to be paid on the bonds in respect of the half-year has been provided by the Antofagasta Railway Company. Holders of the old first mortgage bonds who have not accepted the plan of reorganisation will receive on October 1 interest at the rate of 0·625 per cent., or 2s. 6d. on each £20 bond.

British Aluminium Co. Ltd.—The directors have declared an interim dividend of 4 per cent. on the ordinary shares, payable on October 1.

Ransomes & Rapier Limited.—An interim dividend of 2½ per cent., tax free, is announced, payable on October 1. This is at the same rate as a year ago, but on an increased capital.

English Electric Co. Ltd.—The dividend on the 6½ per cent. cumulative preference stock in respect of the half-year ended June 30, 1937, will be paid on October 1 next.

Aire & Calder Navigation.—An interim dividend of 2½ per cent., less tax, is announced on account of the year ending December 31, 1937. This compares with 2 per cent. at this time a year ago.

Murex Limited.—A final dividend of 10 per cent., plus a cash bonus of 2½ per cent., on the ordinary shares is recommended, making 20 per cent. for the year ended June 30, 1937. For the previous year the total distribution was 25 per cent., but it was paid on a smaller capital.

British Insulated Cables Limited.—The directors have declared an interim dividend of 5 per cent. on the ordinary capital on account of the year to December 31, 1937. The distribution is at the same rate as for a long series of years past, but is this time paid on a 20 per cent. larger capital, owing to the capital bonus of £1 ordinary unit for every £5 held.

R. & W. Hawthorn, Leslie & Co. Ltd.—A dividend of 9 per cent. is recommended for the year ended June 30 last. This compares with 6 per cent. paid for the previous year and with 5 per cent. for the year before that.

Vulcan Foundry Limited.—The directors recommend an ordinary dividend of 2½ per cent., less tax, for the year ended June 30 last. A distribution of 2½ per cent. for 1935-36 was paid from profits on realisation of investments, and was not subject to tax.

Ransome & Marles Bearing Co. Ltd.—The trading profit, after depreciation, for the year to June 30 last, amounted to £220,318, against £160,139 for the previous year, and the net profit after making provision for directors' fees and income tax, was £166,351, against £116,809. As already announced, the directors recommend a final dividend of 12½ per cent., making 20 per cent. for the year, less tax. They place £80,000 to reserve and carry forward £35,860, and recommend that the shares be converted into stock, and that the capital be increased by £200,000 to £700,000. It is proposed to take power to capitalise £125,000 of the reserve and issue this amount to shareholders in the form of a bonus of one fully-paid share for every four held.

Railway Share Market

Encouraged by somewhat less strained conditions in international affairs, the stock and share markets became more active this week. Buyers were attracted by the reduced prices arising from the reactionary conditions which have ruled in recent weeks, while numerous good company reports and dividends and favourable news from trade centres also influenced sentiment.

Home railway stocks received more attention on the assumption that if better market conditions continue there is probably scope for satisfactory recovery in prices. Dividend prospects are still considered to turn a good deal on the extent to which traffics benefit from the higher transport charges. The general belief is that the rise in receipts as from October 1 will be encouraging, and favourable dividend estimates, therefore, remain current, despite expectations that further large sums are likely to be expended on equipment. The past week's traffics created a good impression. Those of the L.N.E.R. were regarded as very good as the railway's receipts to date in the current half-year have exceeded general anticipations. The second preference stock was in request at rather better prices on Wednesday. L.M.S.R. ordinary was also higher following publication of the traffics, the gain of £44,000 being larger than in the case of the other main line railways. Market men are becoming increasingly hopeful that the dividend may be moved up to 2 per cent. Great Western ordinary also participated in the better tendency, it being pointed out that quite a favourable yield is offered on the basis of last year's 3 per cent. dividend. Moreover, there are growing hopes that a larger payment will be forthcoming; estimates in the market now range up to 4 per cent. Southern deferred and preferred stocks improved, although the past week's traffic gain was below anticipations. London Transport "C" reacted in advance of the impending dividend announcement; the report and accounts for the past year are expected to be issued towards the end of next month.

Foreign railway stocks failed to respond to the better general market conditions. As far as concerns those of the Argentine companies the disposition to await the past year's results affected sentiment. There was, however, a better tendency in B.A. Gt. Southern ordinary, which rose further on Wednesday to 23. American railroad stocks and Canadian Pacific reflected the better trend of New York markets.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1936-37	Week Ending	Traffics for Week: Total this year	Traffics for Week: Inc. or Dec. compared with 1936	No. of Weeks	Aggregate Traffics to Date: Totals: This Year	Aggregate Traffics to Date: Totals: Last Year	Aggregate Traffics to Date: Increase or Decrease	Shares or Stock	Prices: Highest 1936	Prices: Lowest 1936	Prices: Sept. 22, 1937	Prices: Yield % (See Note)
South & Central America	Antofagasta (Chili) & Bolivia	834	19.9.37	£ 16,140	+ £ 4,140	38	£ 625,420	£ 510,890	+ £ 114,530	Ord. Stk.	25	15¼	19	Nil
	Argentine North Eastern	753	18.9.37	11,582	+ 1,270	12	123,854	110,351	+ 13,503	"	12	2	10½	Nil
	Argentine Transandine	—	—	—	—	—	—	—	—	A. Deb.	54	45	85	4 11/16
	Bolivar	174	Aug., 1937	4,800	— 100	35	45,600	52,500	— 6,900	6 p.c. Deb.	9	5	8½	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds.	16	11½	15½	3¼
	Buenos Ayres & Pacific	2,806	18.9.37	79,591	+ 3,709	12	925,373	866,163	+ 59,210	Ord. Stk.	17½	6	10	Nil
	Buenos Ayres Central	190	4.9.37	$131,600	— $21,600	10	$1,451,600	$1,214,500	+ $237,100	Mt. Deb.	31½	11	31	Nil
	Buenos Ayres Gt. Southern	5,084	18.9.37	128,102	+ 19,808	12	1,389,889	1,280,196	+ 109,693	Ord. Stk.	31¼	13¾	23	Nil
	Buenos Ayres Western	1,930	18.9.37	48,387	+ 9,152	12	536,974	459,937	+ 77,037	"	29¾	11	19½	Nil
	Central Argentine	3,700	18.9.37	134,957	— 18,608	12	1,580,411	1,592,530	— 12,119	"	32 32/32	8¾	19½	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	21	4½	11½	Nil
	Cent. Uruguay of M. Video	980	11.9.37	15,740	— 147	11	160,124	158,397	+ 1,727	Ord. Stk.	7¾	3	5	Nil
	Cordoba Central	1,218	18.9.37	29,840	— 510	12	437,740	427,260	+ 10,480	Ord. Inc.	5	1	3½	Nil
	Costa Rica	188	July, 1937	24,688	+ 3,250	4	24,688	21,438	+ 3,250	Stk.	36½	32	34	5 7/8
	Dorada	70	Aug., 1937	16,900	—	35	122,400	112,200	+ 10,200	1 Mt. Db.	107	101½	104½	5¼
	Entre Rios	810	18.9.37	14,851	+ 704	12	166 976	146,279	+ 20.697	Ord. Stk.	17	6	10½	Nil
	Great Western of Brazil	1,092	18.9.37	7,100	+ 500	38	269,500	277,900	— 8,400	Ord. Sh.	½	5/16	½	Nil
	International of Cl. Amer.	794	July, 1937	$420,213	+ $109,517	31	$3,625,846	$3,307,205	+ $318,641	—	—	—	—	—
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	1st Pref.	½	-/6	½	Nil
	La Guaira & Caracas	22¾	Aug., 1937	5,080	+ 135	35	43,200	37,195	+ 6,005	Stk.	9	3	7½	Nil
	Leopoldina	1,918	18.9.37	26,357	+ 3,234	38	873.529	703,471	+ 170,058	Ord. Stk.	10½	3½	5	Nil
	Mexican	483	14.9.37	$335,500	+ $76,300	11	$3,276,500	$2,743,500	+ $533,000	"	1¼	¼	½	Nil
	Midland of Uruguay	319	Aug., 1937	7,032	— 939	9	14,578	15,754	— 1,176	"	1½	⅛	½	Nil
	Nitrate	384	15.9.37	7,660	+ 3,936	37	113,641	90,745	+ 22,896	Ord. Sh.	63/6	41/9	2⅝	Nil
	Paraguay Central	274	11.9.37	$2,533,000	— $293,000	11	$36,222,000	$28,288,000	+ $7,934,000	Pr. Li. Stk.	85	71	81½	7⅜
	Peruvian Corporation	1,059	Aug., 1937	92,587	+ 5,347	9	173,721	171,561	+ 2,160	Pref.	15	9	9	Nil
	Salvador	100	11.9.37	¢9,600	+ ¢1,448	11	¢125.059	¢116,126	+ ¢8,933	Pr. Li.Db.	18	16	22½	Nil
	San Paulo	153½	12.9.37	31,900	+ 6,112	37	1,221,275	1,098,636	+ 122 639	Ord. Stk.	86	46½	84½	5 15/16
	Taltal	160	Aug., 1937	4,555	+ 930	9	7,495	6,150	+ 1,345	Ord. Sh.	1 15/32	14/-	1	10
	United of Havana	1,353	18.9.37	14,587	+ 516	12	212,185	186,188	+ 25,997	Ord. Stk.	3¼	1	2½	Nil
	Uruguay Northern	73	Aug., 1937	794	+ 7	9	1.560	1,692	— 132	Deb. Stk.	5	3	6	Nil
Canada	Canadian National	23,766	14.9.37	829,943	+ 911	37	27,206,754	24,859,180	+ 2,347,574	—	—	—	—	—
	Canadian Northern	—	—	—	—	—	—	—	—4 p.c.	Perp. Dbs.	76	51	67½	5 15/16
	Grand Trunk	—	—	—	—	—	—	—	—	4 p.c. Gar.	104¾	99¾	100½	4
	Canadian Pacific	17,228	14.9.37	646,600	— 9,600	37	19,408,000	18,401,200	+ 1,006,800	Ord. Stk.	16¾	10 15/16	10	Nil
India†	Assam Bengal	1,329	31.8.37	37,605	+ 3,283	22	547,609	506,539	+ 41,070	Ord. Stk.	87¾	82¼	77½	3⅞
	Barsi Light	202	20.8.37	2,257	— 315	20	54,412	50,512	+ 3,900	Ord. Sh.	77½	65½	46§	10⅞
	Bengal & North Western	2,111	31.8.37	62,678	— 5,769	22	1,249.615	1,145,651	+ 103,964	Ord. Stk.	319	292 5/8	308	5 1/16
	Bengal Dooars & Extension	161	31.8.37	5,255	+ 1,085	22	56,322	52,370	+ 3,952	"	127½	118	87½	6 5/16
	Bengal-Nagpur	3,268	31.8.37	182,175	+ 22,228	22	2.891,334	2,559,736	+ 332,098	"	104	100¼	90½	4 7/16
	Bombay, Baroda & Cl. India	3,072	10.9.37	209,400	+ 15,225	23	3.936,750	3,639,450	+ 297,300	"	114	110½	111½	5⅜
	Madras & Southern Mahratta	3,229	31.8.37	142,650	+ 8,679	22	2.368,108	2,341,191	+ 23,917	"	116½	108½	108½	7⅛
	Rohilkund & Kumaon	546	31.8.37	10,930	— 749	22	234,551	228,650	+ 5,901	"	311	286	310	5 15/16
	South Indian	2,531¾	20.8.37	115,009	+ 14,565	20	1,627,983	1,569,532	+ 58,451	"	107½	102 5/16	101½	5 7/16
Various	Beira-Umtali	204	July, 1937	97,402	+ 29,426	43	774,298	645,518	+ 128,780	—	—	—	—	—
	Egyptian Delta	620	31.8.37	7,355	+ 992	22	97,164	88,469	+ 8,695	Prf. Sh.	21¼	16⅜	15⅜	Nil
	Great Southern of Spain	—	—	—	—	—	—	—	—	Inc. Deb.	11½	1⅓	3½	Nil
	Kenya & Uganda	1,625	May, 1937	216,935	— 20,539	22	1,334,126	1,229,899	+ 104,227	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	B. Deb.	50½	37	46	7 5/8
	Midland of W. Australia	277	July, 1937	10,245	+ 31	4	10,245	10,214	+ 31	Inc. Deb.	97	93½	95	4 3/16
	Nigerian	1,900	31.7.37	43,938	+ 19,922	18	896,682	509,162	+ 387,520	—	—	—	—	—
	Rhodesia	2,451	July, 1937	412,400	+ 109,751	43	3,764,458	2,887,519	+ 876,939	—	—	—	—	—
	South Africa	13,263	4.9.37	659,827	+ 27.399	23	14,276,026	13,340,644	+ 935,382	—	—	—	—	—
	Victoria	4,774	May, 1937	822,932	+ 43,220	48	9,312,068	8,986,232	+ 325,836	—	—	—	—	—
	Zafra & Huelva	112	July, 1937	9,085	—	35	89,945	57,843	+ 32,102	—	—	—	—	—

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1/16.

† Receipts are calculated @ 1s. 6d. to the rupee. § ex dividend. Salvador and Paraguay Central receipts are in currency.

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the Sterling weekly receipts at the par rate of exchange has proved misleading, the amount being overestimated. The statements are based on the current rates of exchange and not on the par value.